Studies of Chinook Salmon (Oncorhynchus Tshawytscha) in the Chilcotin River Watershed 1975-1980

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STUDIES OF CHINOOK SALMON (Oncorhynchus tshawytscha) IN THE CHILCOTIN RIVER WATERSHED 1975 - 1980

by

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ABSTRACT

Delaney, P.W., A.L. Kahl, W.R. Olmsted and B.C. Pearce. 1982. Studies of Chinook Salmon (*Oncorhynchus tshawytscha*) in the Chilcotin River Watershed, 1975 - 1980. Can. MS Rep. Fish. Aquat. Sci. 1674; xv +162 pp.

Chilcotin River system chinook salmon (*Oncorhynchus tshawytscha*) were studied between 1975 and 1980. During 1975 and 1976 the distribution of rearing juveniles and adult spawners was determined. Juvenile chinook were captured from the Chilcotin River in 1977, and from the Chilko River in 1978 and 1979 for coded wire tagging. Captured chinook were reared in pens for a maximum of 80 to 103 days prior to being tagged. Reared fish were fed Oregon Moist Pellets. Fish grew from approximately 36 mm and 0.5 g in late April of each year to approximately 55 mm and 2 g by the late July or early August tagging period. Size and growth varied slightly between years. During 1977, 1978 and 1979, 49,565, 149,159 and 195,455 young of the year chinook were released with adipose clips and coded wire tags (tag codes 02-21-17; 02-21-19 and 02-21-25; 02-16-58 and 02-16-02, respectively). During 1977 an additional 793 yearling chinook (code 02-21-16) and 424 steelhead (*Salmo gairdneri*) (code 12-01-08) were tagged. Immediate (24 hour) tag rejection varied between years from 0.8% to 2.4%.

During the study, spawning adult chinook salmon throughout the watershed were enumerated and sampled for age, sex, length, egg retention and flesh color. A total of 3,422 carcasses were sampled. Females comprised the greatest portion of the sample (71.9%). Prior to 1980, four-year-old chinook that had migrated to sea as underyearlings (4_1) predominated (62% of the escapement). During 1980, five-year-old chinook that had migrated to sea as yearlings (5_2) predominated (56% of the escapement). Other age classes present were 2_1, 3_1, 3_2, 4_1, 4_2, 5_1, and 6_2.

The mean size of males and females differed slightly between years and different spawning populations within the watershed, primarily as a function of age and the small sample sizes in the early years of the study. Spawning success was high; 97.9% of the females and 87.8% of the males spawned completely. The majority of the fish sampled appeared white-fleshed, however, the flesh color data are suspect. During 1979, five chinook carcasses with missing adipose fins were recovered, but none contained coded wire tags. During 1980, 16 carcasses were encountered with missing adipose fins, however, only four were considered to be valid clips and only one coded wire tag (code 02-21-16) was subsequently found. The tagged fish recovered was aged from scales as 5_2.

Water temperature, flow and some physical data were also collected.

Key Words: Chinook, Salmon, Chilcotin River, Chilko River, coded wire tagging.

RESUMÉ

Delaney, P.W., A.L. Kahl, W.R. Olmsted and B.C. Pearce. 1982. Studies of Chinook Salmon (Oncorhynchus tshawytscha) in the Chilcotin River Watershed, 1975 - 1980. Can. MS Rep. Fish. Aquat. Sci. 1674: xv +162pp.

Des études sur le saumon quinnat (*Oncorhynchus tshawytscha*) du bassin versant de la rivière Chilcotin ont eté effectuees entre 1975 et 1980. On a determine, en 1975 et 1976, la distribution des jeunes et des géniteurs adultes. Les jeunes saumon quinnant capturés en 1977 dans la rivière Chilcotin et en 1978 et 1979 dans la rivière Chilko on ete fixer des etiquettes metaliques codees.Tous les saumon capturés on ete éleves dans des enclos pour une durée variante entre 80 et 103 jours avant d'être étiquetés. Les poissons ont été nourris de moulée en cubes "Oregon Moist Pellets". Au cours de la période d'étiquetage, les poissons qui, a la fin d'avril de chaque année, mésuraient en moyenne 36 mm et pesaient 0,5 g, ont atteint 55 mm et 2 g a la fin de juillet ou au début d'aout. La taille et la croissance ont varie légerement d'une année a l'autre. On a libéré en 1977, 1978 et 1979, respectivement 49 565, 149 159 et 195 455 jeunes saumons de l'annee, auxquels on avait enlevé la nageoire adipeuse et fixé une étiquette métallique codée (codes d'etiquette 02-21-17; 02-21-19 et 02-21-25; 02-16-58 et 02-16-02). De plus, on a étiqueté, en 1977, 793 saumons quinnats d'un an (code 02-21-16) et 424 truites arc-en-ciel (*Salmon garidneri*) (code 12-01-08). Les pertes immediates (en 24 heures) d'etiquettes ont varie d'une annee a l'autre entre 0,87% et 2,4%.

Au cours de l'étude, on a denombré les reproducteurs dans tout le bassin versant et on a préleve des echantillons afin de déterminer l'age le sexe, la longueur, le degré de retention des oeufs et la couleur de la chair. On a preleve en tout 3,422 individus. La plus grande partie de l'échantillon était constituée de femelles (71,9 %). Avant 1980, 62% des saumons de remonte étaient des individus de 4 ans qui s'étaient redus en mer avant d'avoir atteint l'age d'un an (4_1). En 1980, la remonte etait constituée a 56% de saumons de 5 ans qui s'étaient 2_1, 3_1, 3_2, 4_2, 5_1, et 6_2.

La taille moyenne des males et des femelles a varié légerement d'une année a l'autre et entre les populations de reproducteurs presents dans le bassin versant, a cause surtout de l'age des individus et de la faible taille des echantillons au cours des premières années de l'étude. Le taux de succes de la reproduction a été élevé: 97,9% des femelles et 87,8% des males ont libéré completement leurs produits sexuels. La chair de la plupart des poissons échantillonnes etait blanche; cependant, les données sur la couleur de la chair sont douteuses. On a retrouve, en 1979, 5 carcasses de saumons quinnats dépourvus de nageoire adipeuse, mais aucun d'entre eux n'avait d'étiquette métallique codée. On a denombré, en 1980, 16 carcasses sans nageoire adipeuse, mais la mutilation n'a été considérée comme valable que dans quatre cas; ulterieurement, une seule étiquette metallique codee a été retrouvée (code 02-21-16). D'après l'étude des écailles, l'age des poissons retrouvés munis d'une étiquette était 5_2.

On a receuilli également des données sur la température, le débit et certaines caracteristiques physiques.

Mots-cles: saumon quinnat, rivière Chilcotin, rivière Chilko, fixation d'une étiquette métallique codée.

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SUMMARY

1. From April 28 to August 12, 1977, a total of 80,687 underyearling chinook, 11,065 yearling chinook, and 11,199 juvenile rainbow trout were captured by inclined plane trap, beach seine and minnow trap in the Chilcotin River.

2. From April 21 to June 5, 1978, a total of 257,969 underyearling chinook, 5 yearling chinook and 44 juvenile rainbow trout were captured by inclined plane trap in the Chilko River. From April 26 to May 28, 1979, a total of 588,528 underyearling chinook, 45 yearling chinook and 147 juvenile rainbow trout were captured in the Chilko River.

3. From April 29 to August 23, 1977, an estimated 73,400 underyearling chinook were reared near the Hanceville bridge on the Chilcotin River, with approximately 2,600 underyearling chinook (3.5%) mortalities. Specific growth rate of pen reared fry ranged from -1.88 on August 4 to 1.71 on June 17.

4. From April 22 to July 23, 1978, an estimated 234,300 underyearling chinook from the Chilko River were reared at the Chilko Lake outlet, with approximately 11,900 (6.0%) mortalities. The specific growth rate ranged from -0.04 on May 28 to 1.19 on June 11.

5. From April 26 to July 16, 1979, an estimated 228,700 chinook fry were reared at the Chilko Lake outlet, with approximately 4,900 (2.1%) mortalities. The specific growth rate ranged from - 0.31 on May 5 to 0.90 on June 6.

6. In 1977, an estimated 49,565 underyearling chinook, 793 yearling chinook and 424 juvenile rainbow trout were released in the Chilcotin River with adipose fin clips and coded wire tags.

7. In 1978 and 1979 respectively, an estimated 149,159 and 195,455 underyearling chinook were released in the Chilko River with adipose fin clips and coded wire tags.

8. In 1977, downstream migration trapping on the Chilcotin River indicated that fry migration began in early April, peaked in mid-May and was complete by late June. Beach seining and minnow trapping suggested extensive side channel rearing in the Bull Canyon, Alexis Creek and Hanceville areas. From August through late September, the relative abundance of chinook juveniles declined markedly. The extent of overwintering in the Chilcotin River is presently unknown. Although yearling chinook were captured at the Hanceville bridge in 1977, these fish may have overwintered upstream in the Chilko, Taseko, Upper Chilcotin Rivers or Elkin Creek.

9. In 1978 and 1979, juvenile downstream migration trapping on the Chilko River indicated that chinook fry migration began in late April, peaked in mid-May and terminated by early June. Extensive rearing, and probably overwintering, occurred in side channels of the islands below Henry's Crossing. Light rearing and some overwintering occurred in the Chilko River mainstem and islands upstream from Henry's Crossing.

10. From 1975 to 1980, escapements ranged from 3,300 - 11,000 on the Chilko River, 700 - 1,500 on the Chilcotin River, 100 - 450 on Elkin Creek and 25 - 350 on Taseko River. Spawning commenced in mid-August on Chilcotin and Taseko Rivers and early September on Chilko River and Elkin Creek. The major spawning areas were the Lingfield Creek area, Canoe Crossing and downstream of Henry's Crossing on the Chilko River; between Redstone and the River Road bridge on the Chilcotin River; downstream of Elkin Lake on Elkin Creek; and between the Taseko Lake outlet downstream for 3 km on the Taseko River.

11. A total of 2,440 carcasses were sampled for length, age, sex, race and degree of spawning success. The sex composition of chinook spawners sampled in the Chilcotin River drainage from 1975 to 1980 indicated a predominance of females. Yearly variations in sex ratio were evident for each system, and the six year mean male:female percent sex composition was 28.1:71.9% on Chilko River, 39.9:60.1% on Upper Chilcotin River, 49.6:50.4% on Elkin Creek and 25.3:74.7% on Taseko River.

12. Prior to 1980 on the Chilcotin River system, ocean-type chinook age 4_1, and to a lesser degree 3_1, were the major component of the carcasses sampled. In 1980, a shift to stream-type chinook age 4_2 and 5_2 occurred for both sexes.

13. The mean length (cm) by age of chinook carcasses sampled on the Chilcotin River system from 1975 to 1980 was:

	Chilko River		Upper Chilcotin River		Elkin Creek		Taseko River	
	M	F	M	F	M	F	M	F
2_1			41.1					
3_1	54.8	62.4	56.1	59.7	50.5	59.8		65.2
3_2	40.9		41.7					
4_1	74.5	70.7	71.6	66.7	71.5	68.4	77.1	72.0
4_2	55.7	64.0	57.0	60.2	59.0	60.1		66.9
5_1	82.3	78.1		69.1	78.1			
5_2	73.2	70.9	71.4	67.9	73.5	69.5	74.9	70.6
6_1	82.9	76.2						

In general: (1) ocean-type 3_1, 4_1 and 5_1 chinook were longer than respective stream-type 3_2, 4_2 and 5_2 chinook; (2) carcasses sampled from the same brood year (i.e. similar ocean residence time: 3_1-4_2, 4_1-5_2 and 5_1-6_2) were approximately the same length; and, (3) males were longer than females of similar age.

14. On all rivers, chinook carcasses examined for egg and sperm retention indicated a high spawning success; an average of 97.9% of females and 87.8% of males had spawned completely. Pre-spawning mortality averaged 1.7% and 9.8% among females and males, respectively.

15. In 1979, an attempt to determine fecundity of Chilko River females was unsuccessful. In 1980, the fecundity of one female that died prior to spawning was volumetrically estimated at 5,900 eggs.

16. White chinook comprised 83.8% of Chilko River, 71.4% of Upper Chilcotin River, 90.8% of Elkin Creek and 92.2% of Taseko River samples; however, these data are suspect.

17. In 1979 and 1980 respectively, a total of 681 and 3,422 chinook carcasses were examined from the Chilcotin River drainage to detect coded wire tags from 1977 to 1979 tagging activities. In 1979, 5 carcasses of 681 examined lacked adipose fins; none contained coded wire tags. In 1980, 4 chinook of 3,422 examined had excised adipose fins, but only one contained a coded wire tag, a 5_2 chinook male tagged in 1977 as a yearling.

INTRODUCTION

The Chilcotin River drainage supports one of the largest escapements of chinook (Oncorhynchus tshawytscha) and sockeye (O. nerka) salmon in the Fraser River watershed. The Department of Fisheries and Oceans (DFO) and the International Pacific Salmon Fisheries Commission (IPSFC) have monitored these respective species for many years to determine spawner distribution and abundance.

From 1975 to 1979, the DFO conducted bioreconnaissance of the Chilcotin River system to provide specific information for resource management and enhancement. The objectives of these reconnaissance were to collect baseline biological data to characterize the life history of Chilcotin River chinook stocks, and to mark juvenile chinook with coded wire tags (CWT) in order to determine exploitation patterns, survival rates and temporal aspects of migration.

In 1980, DFO commissioned E.V.S. Consultants Ltd. to conduct a reconnaissance of the Chilcotin River watershed during the period of chinook immigration, spawning and die-off. The investigation was designed to: (1) estimate the spawning escapement, (2) describe temporal/spatial aspects of reproduction in major tributaries, (3) determine the age, sex and length composition of spawners, and (4) sample the escapement for CWT-marked chinook. E.V.S. Consultants Ltd. was subsequently requested to incorporate data from previous investigations conducted by the DFO from 1975 to 1979. This report summarizes all components of the 1975 through 1980 studies, from preliminary reconnaissance to recovery of the first two years of returns from the coded wire tagging program.

STUDY AREA

The Chilcotin River is a major tributary of the Fraser River in the west central region of British Columbia (Fig. 1). Originating in the Itcha Range of the Coast Mountains, the Chilcotin River flows southeast across the Fraser Plateau for approximately 250 km to merge with the Fraser River, some 45 km southwest of Williams Lake. The drainage is comprised of numerous tributaries of varying size; of these, the Upper (Little) Chilcotin, Chilko and Taseko rivers and Elkin Creek support chinook salmon.

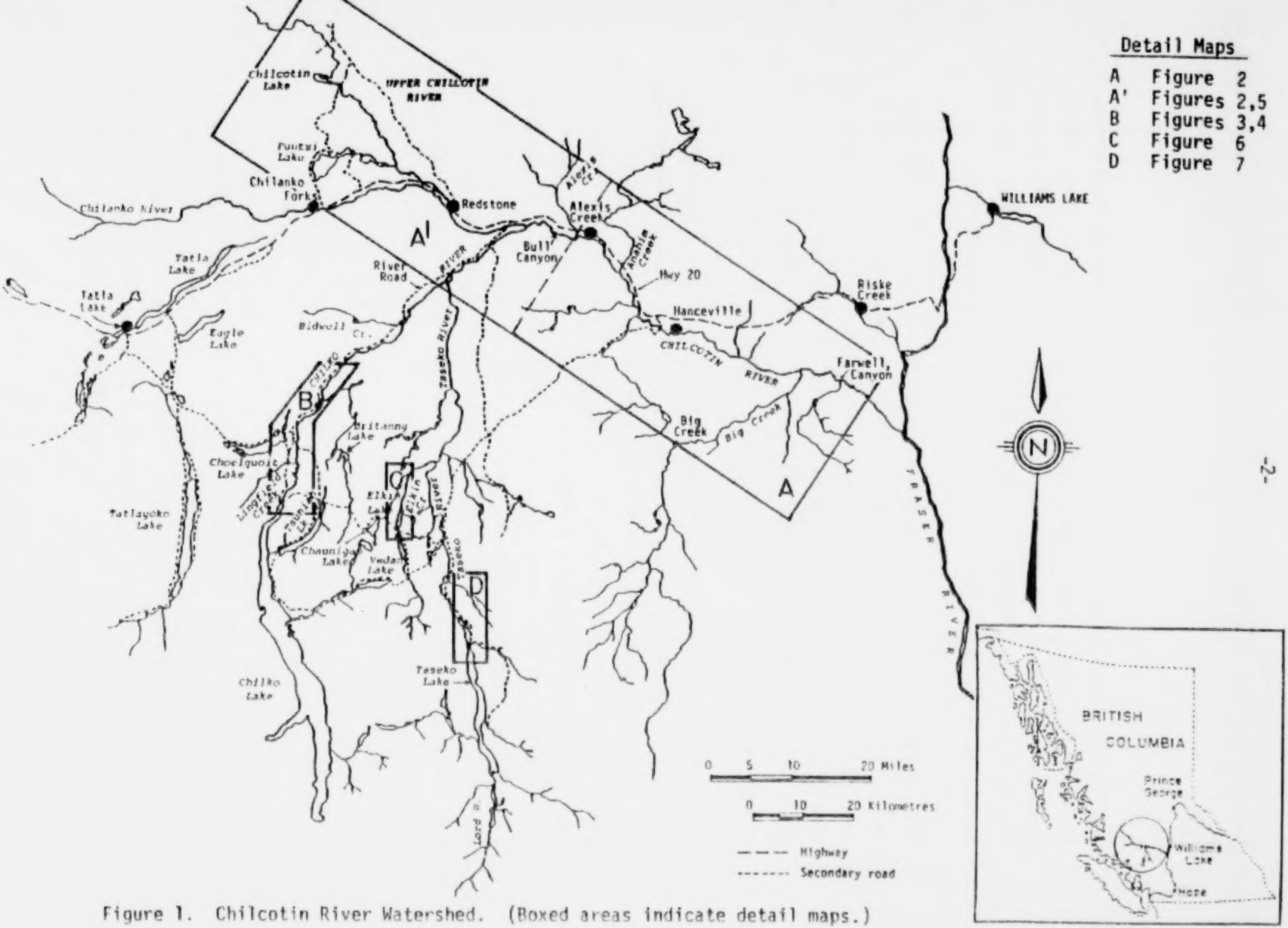

Detail Maps
A Figure 2
A' Figures 2,5
B Figures 3,4
C Figure 6
D Figure 7
Chilcotin Lake
UPPER CHILCOTIN RIVER
Puntzi Lake
Chilanko Forks
Chilanko River
Redstone
A'
Alexis Cr.
Alexis Creek
Anahim Creek
Bull Canyon
River Road
RIVER
Hwy 20
WILLIAMS LAKE
Tatla Lake
Tatla Lake
Eagle Lake
Bidwell Cr.
Taseko River
Hanceville
CHILCOTIN RIVER
Riske Creek
Farwell Canyon
B
CHILKO
Britanny Lake
Choelquoit Lake
Big Creek
Big Creek
A
Lingfield Cr.
Tsuniah Lake
C
Elkin Lake
Elkin Cr.
Tatlayoko Lake
Chaunigan Lake
Vedan Lake
Taseko
D
Taseko Lake
Chilko Lake
Lord R.
FRASER RIVER
N
BRITISH COLUMBIA
Prince George
Williams Lake
Hope
0 5 10 20 Miles
0 10 20 Kilometres
Highway
Secondary road

Figure 1. Chilcotin River Watershed. (Boxed areas indicate detail maps.)

The watershed drains approximately 19125 km^2 (Water Survey Canada, 1977) of varying terrain ranging from alpine and forested areas in the headwaters to rolling arid bunchgrass benchlands and incised rocky canyons in the middle and lower reaches. Ponderosa pine-bunchgrass and Cariboo aspen-lodgepole pine-Douglas fir are the dominant floral communities of the watershed (Lyons, 1952), with sagebrush and cactii occurring at lower elevations.

Mean monthly temperature ranges from -7 to -12°C in January and from 13 to 16°C in July (Atmospheric Environment Canada, unpubl. data). Annual precipitation varies with location and altitude within the watershed. Lower reaches receive 250 to 400 mm annually, while headwaters accumulate 1500 to 2500 mm, primarily as snow during winter months. Glaciers are common in the headwaters of Chilko and Taseko Rivers.

Elevations (above sea level) range from 3000+ m in the Chilcotin Range to approximately 400 m near the junction of the Chilcotin and Fraser Rivers. Average elevation of the Fraser Plateau is 1100 m.

The Upper Chilcotin River originates in the Itcha Mountains and flows southeast to join the Chilko River approximately 16 km west of Alexis Creek. The watercourse is approximately 150 km in length and comprises 32% of the Chilcotin River watershed area. The 58 km reach from Chilcotin Lake to the Chilko River has a vertical drop of 335 m and ranges from 10 to 30 m in width. Discharge extremes have varied from 5.5 to 86.8 m^3/sec for the limited period of record (Water Survey Canada, 1977). In contrast to the semi-arid conditions which prevail throughout much of the Chilcotin River drainage, the Upper Chilcotin River is characterized by abundant riverine vegetation such as poplars and willows. Downstream of the Chilanko River confluence, the Upper Chilcotin River braids into numerous narrow, shallow channels.

The Chilko River originates from Chilko Lake in the Coast Mountains, and flows northeast for 84 km to the Chilcotin River. The Chilko River is the largest tributary of the Chilcotin River drainage, but constitutes only 35% of the total watershed area (Water Survey Canada, 1977). Extremes of discharge have ranged from 7.8 to 481.1 m^3/sec for the period of record (1927-1976; Water Survey Canada, 1977). The Chilko River drops 450 m from Chilko Lake to the Upper Chilcotin River confluence, and channel width ranges from 20 to 50 m. Downstream of the Upper Chilcotin River confluence, the watercourse is termed the Chilcotin River.

The Taseko River drainage originates in the Chilcotin Range of the Coast Mountains and flows approximately 126 km to the Chilko River. Numerous watercourses drain surrounding glaciers into Taseko Lake, which imparts a suspension of fines throughout the lake and downstream reaches. From the origin of Taseko River on the western edge of Wilson Ridge to Taseko Lake, the watercourse is approximately 26 km in length. In the 100 km reach from Taseko Lake to the Chilko River, the river is 20 - 40 m in width, and drops 550 m. The Taseko River merges with the Chilko River approximately 64 km downstream from Chilko Lake, and effectively doubles the Chilko's discharge.

Elkin Creek originates from Mt. Tatlow and flows approximately 46 km northeast to join the Taseko River some 96 km upstream of the Chilko River confluence. The Elkin Creek drainage contains two lakes, Vedan and Elkin, and is typified by numerous sloughs, beaver dams, log jams, deciduous shrubs and emergent streambank vegetation. The watercourse is generally slow and meandering, and the water clear.

The mainstem Chilcotin River from the confluence of the Chilko River flows southeast for approximately 106 km to the Fraser River. The channel is 30 to 70 m in width, drops 366 m, and discharges from 14.4 to 495.3 m^3/sec (Water Survey Canada, 1977).

Many areas of the Chilcotin River watershed are accessible from Highway 20. Numerous fourwheel drive logging and ranching roads access the area from secondary roads off Highway 20. Accessibility is often seasonal, depending upon prevailing weather conditions. Access to the Taseko Lake area in spring or rainy weather requires a fourwheel drive vehicle.

Ranching and logging occur throughout much of the Plateau and surrounding foothills. Mineral exploration activities are presently increasing.

FISHERY RESOURCE

The Chilcotin River drainage supports major escapements of chinook and sockeye salmon; pink (O. gorbuscha) and coho (O. kisutch) salmon have been observed, but are rare. Steelhead and rainbow trout (Salmo gairdneri), Dolly Varden char (Salvelinus malma) and mountain whitefish (Prosopium williamsoni) are also present.

Spawning chinook utilize Upper Chilcotin, Chilko and Taseko rivers and Elkin Creek, and are occasionally observed in the Chilcotin (mainstem) and Chilanko rivers. Mean escapement for these rivers from 1971 to 1979 was 933, 5,533, 185 and 269, respectively (Manzon and Marshall, 1980). Mean chinook escapement of the Chilcotin River system from 1971 to 1979 was 6,838, and has ranged from approximately 1,200 (1960) to 12,300 (1975). Approximately 80% of the total escapement to the Chilcotin River system utilizes the Chilko River.

The Chilcotin River drainage is one of the most significant producers of sockeye salmon in the Fraser River (IPSFC, 1980). Sockeye utilize the Chilko River mainstem downstream of Chilko Lake, and tributaries and beach areas in Chilko and Taseko lakes. Populations are characterized by a dominant year, two large sub-dominant years and an 'off-year'. Escapements have ranged from approximately 2,000 (1939 off-year) to 1,200,000 (1963), although off-year and dominant-year ranges of 30,000 to 70,000 and 400,000 to 500,000, are more typical. Since 1974, Chilko and Taseko lake beach spawning populations have ranged from approximately 2,500 to 55,000, and from few fish to 32,000, respectively. The IPSFC initiated investigations on the Chilko River in 1938. Studies have largely focused on juvenile and adult enumeration and related ecological research. Fishways were constructed by the IPSFC in Farwell Canyon in the lower Chilcotin River, and began operation in 1948.

Approximately 500 to 1,000 steelhead spawn in the Chilcotin River drainage (C. Spense, pers. comm.); populations are fall-run, which immigrate during October to November, and spawn the following spring. Approximately 85% spawn from the head of Bidwell Canyon to Lingfield Creek in the Chilko River, while the remainder spawn in the Taseko River immediately below Taseko Lake (C. Spense, pers. comm.).

Little is known of steelhead utilization of Upper Chilcotin River. The B.C. Ministry of Environment has conducted research on Chilcotin River steelhead since 1977. Studies have included radio-tagging and tracking of spawners in fall, enumeration of juveniles in spring, and delineation of stream carrying capacity. A pilot hatchery is presently in operation near Alexis Creek which produces steelhead fry for stocking underutilized areas of the drainage.

A sport fishery for resident rainbow trout and Dolly Varden char exists in many accessible areas of the drainage. Prior to implementation of recreational angling closures on Fraser River chinook in 1979, salmon were intensively fished by residents of Williams Lake, Alexis Creek and surrounding communities. The Chilcotin River supports a significant recreational fishery for steelhead trout, which, in recent years has been regulated by catch-and-release restrictions.

The Indian community captures chinook and sockeye salmon from the mainstem Chilcotin and Chilko Rivers by traditional methods such as spear and dipnet. From 1971 to 1979, Indians took an average of 12,908 and 1,174 sockeye/year from the Chilcotin and Chilko Rivers respectively, while an average of 284 and 53 chinook respectively were concurrently harvested (G. Scott, pers. comm.).

MATERIALS AND METHODS

STREAM DESCRIPTIONS AND PHYSICAL/CHEMICAL MEASUREMENTS

Physical parameters, including wetted stream width, depth, velocity, water temperature, color, visibility, and streambed composition were measured or subjectively described for various stream sections in the Chilcotin River system from 1975 to 1979. Sampling dates and sampling sites are summarized in Appendix V.

Stream widths were measured with a 30 m tape, a Ranging Optical Tape Measure, or a Rangematic Mark V distance finder. Depths (m) were measured with a graduated range pole, supplemented by visual estimates in deep, inaccessible areas. Surface water velocity was estimated by timing a floating object over a measured distance. Water temperatures ($\pm$ 1.0°C) were taken using standard pocket thermometers. Dissovled oxygen concentrations ($\pm$ 1.0 ppm) and pH ($\pm$ 0.1 pH units) were determined using Hach water analysis field kits.

Samples for water quality analyses were taken on September 27 and October 6, 1979 from the Chilko River at the lake outlet. The samples were sent to the DFO Water Quality Laboratory, Vancouver, for nutrient, residue and metal analyses.

During the juvenile tagging programs, water temperature was recorded by Taylor thermographs. The 1977 (May 6 to August 14) recording sites were located on the Chilcotin River at the Hanceville Bridge (T1; Fig. 2) and on the Upper Chilcotin River at the river road bridge (T2). In 1978 (April 21 to July 20), temperature was recorded on the Chilko River at Henry's Crossing bridge (T3; Fig. 3), and in 1979 (April 30 to July 27) at Henry's Crossing bridge and the Chilko Lake oultet (T4).

Water discharge data were obtained from Water Survey Canada, Vancouver, for the Chilcotin River (below Big Creek wood culvert -WD1; Fig. 2) and the Chilko River (near Redstone - WD2, outlet of Chilko Lake - WD3; Fig. 3).

JUVENILE CHINOOK STUDIES

Juvenile chinook reconnaissance (1975-1979)

Juvenile chinook sampling was conducted in conjunction with fall spawning ground surveys to determine the distribution, age and length of rearing chinook in the Chilcotin River watershed. The Chilko River was studied annually from 1975 to 1979, and the Chilcotin River from 1976 to 1979. The Upper Chilcotin River was sampled in 1976 and 1977. Taseko River and Elkin Creek were sampled in 1977 and 1978, and Lord River and Chaunigan Lake were examined in 1977. Exact dates and location of samples are summarized in Appendix IX.

Chinook were captured by Gee minnow traps, beach seines, electrofishing and fyke net. Minnow traps, fabricated from 6.4 mm square galvanized mesh, were baited with fresh, frozen or salted salmon roe, and fished for periods ranging from 1 to 36 h. Two seine sizes were utilized: 15.0 x 1.8 m constructed from 6.4 mm mesh with a 3.2 mm mesh bunt; and, a 4.6 x 1.2 m made from 6.4 mm mesh. In 1976, the mainstem Chilcotin and Upper Chilcotin rivers were sampled to a limited extent by Smith-Root type VIII electroshocker, and a 0.3 x 0.6 m fyke net constructed from marquisette mesh.

Subsamples of chinook juveniles were anaesthetized with MS-222 and measured for nose-fork length (mm). Scale smears taken from some juvenile chinook were aged by personnel of the DFO Scale Laboratory, Vancouver.

Coded wire tagging program (1977-1979)

Capture methods

Juvenile chinook salmon were captured from the Chilcotin River in the spring and summer of 1977, and from the Chilko River in the spring of 1978 and 1979 to obtain fish for coded wire tagging. Trapping methods included inclined plane traps, minnow traps and beach seines.

Chilcotin River (1977)

Inclined plane traps: Two 1.2 x 1.2 m (4' x 4') and two 0.6 x 0.9 m (2' x 3') inclined plane traps (IPTs) were fished in the mainstem Chilcotin River at Hanceville bridge from April 28 to August 8 (IPT-1, Fig. 2; Photos 1,2). Trap positions were varied to maximize fish catches, but were generally fished near the banks, out of the mainstem current. From 1977 to 1979, traps were fished only during the night after it was determined that few chinook fry emigrated during the day. Traps were checked each morning; however, during periods of high flow and excessive debris, traps were monitored continuously. Traps were cleaned of debris and the fishing depth adjusted as necessary to reduce turbulence related fish mortality. Captured fish were dipnetted from trap live boxes into buckets and transferred to temporary floating holding pens for enumeration.

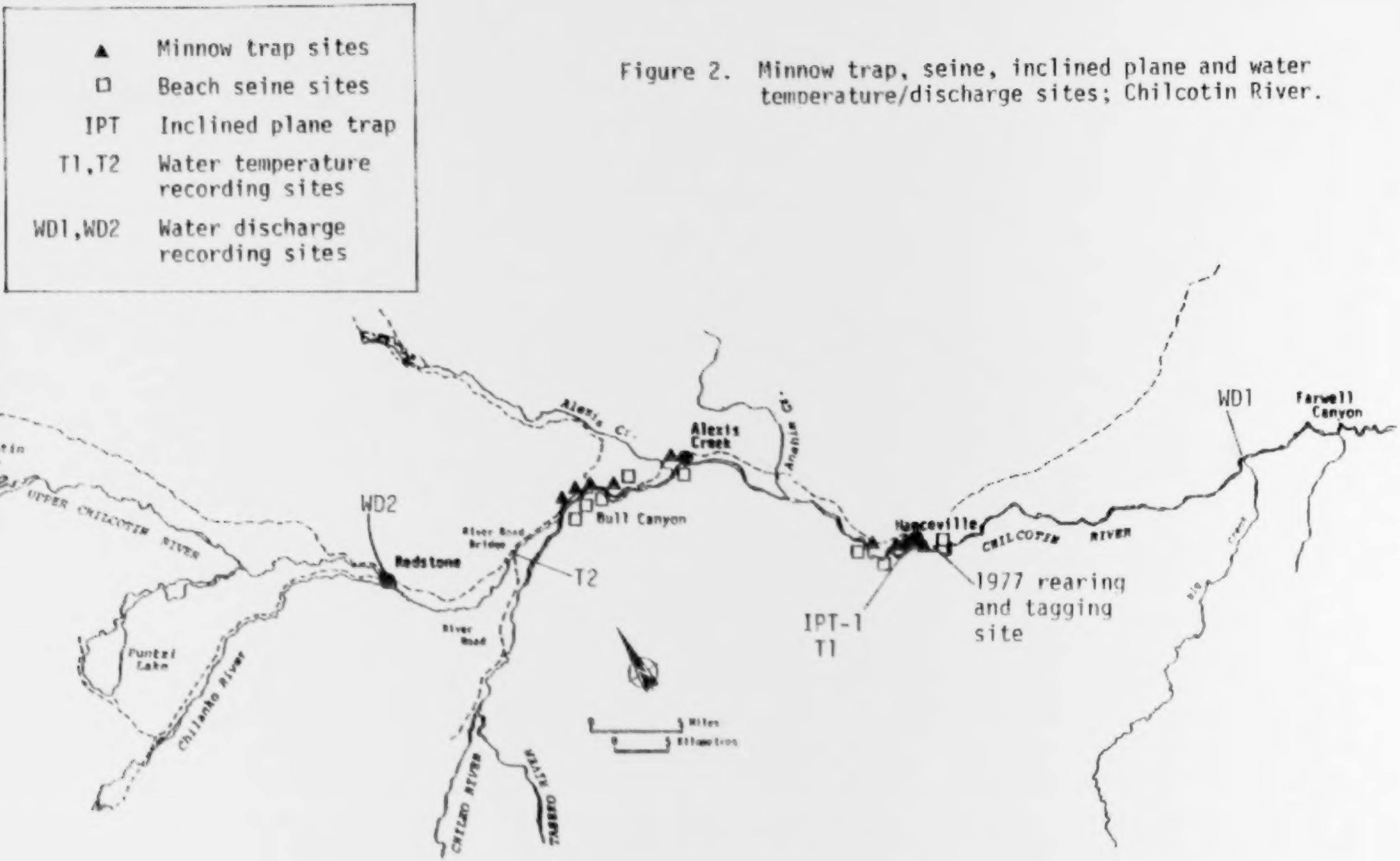
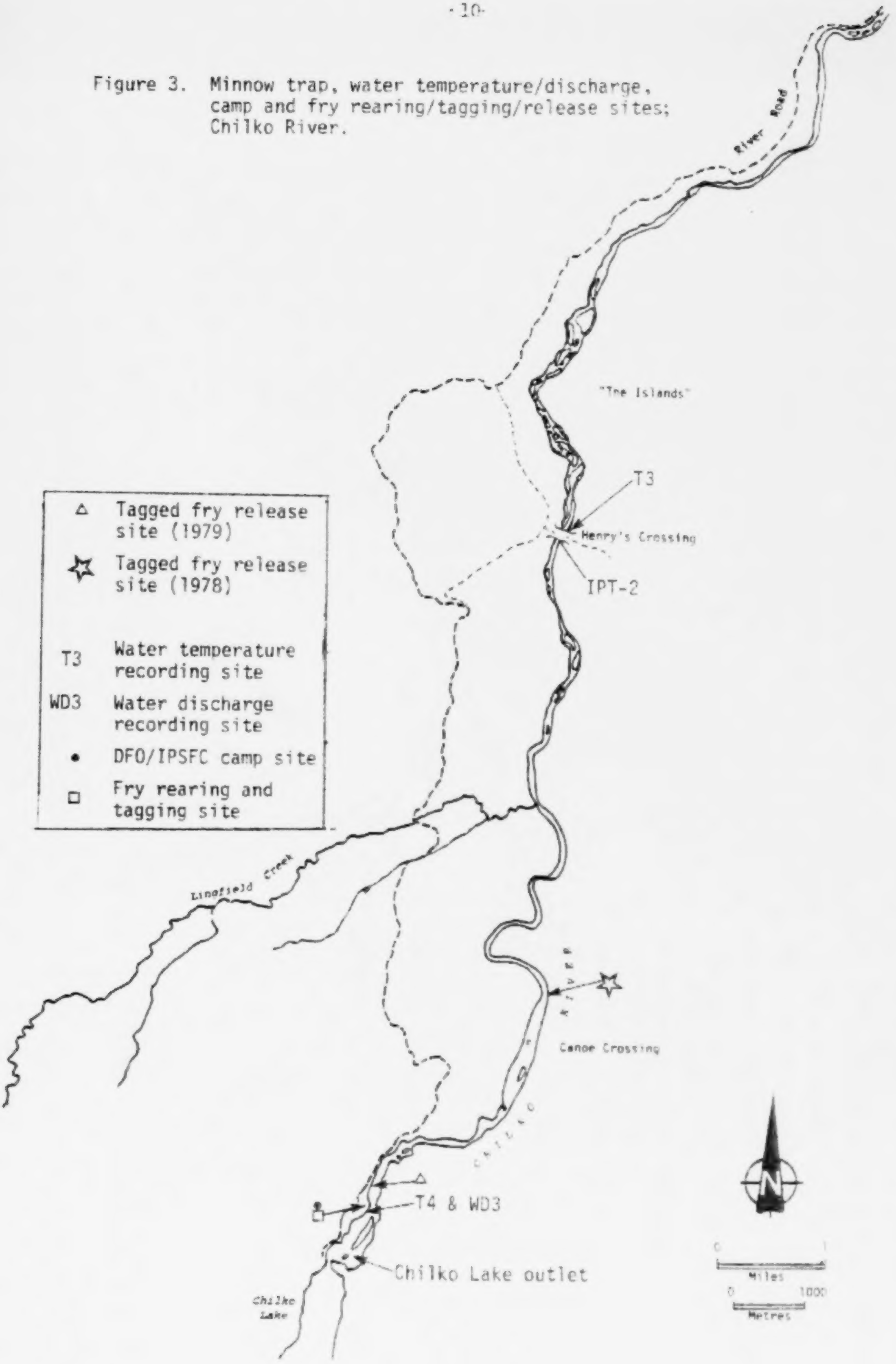

▲ Minnow trap sites
□ Beach seine sites
IPT Inclined plane trap
T1,T2 Water temperature recording sites
WD1,WD2 Water discharge recording sites
Chilcotin Lake
UPPER CHILCOTIN RIVER
Puntzi Lake
Chilanko River
WD2
Redstone
River Road Bridge
River Road
T2
CHILKO RIVER
TASEKO RIVER
Alexis Cr.
Alexis Creek
Bull Canyon
Anaham Cr.
Hanceville
IPT-1
T1
1977 rearing and tagging site
CHILCOTIN RIVER
Big Creek
WD1
Farwell Canyon
0 5 Miles
0 5 Kilometres

Figure 2. Minnow trap, seine, inclined plane and water temperature/discharge sites; Chilcotin River.

Figure 3. Minnow trap, water temperature/discharge, camp and fry rearing/tagging/release sites; Chilko River.


River Road
"The Islands"
T3
Henry's Crossing
IPT-2
△ Tagged fry release site (1979)
☆ Tagged fry release site (1978)
T3 Water temperature recording site
WD3 Water discharge recording site
● DFO/IPSFC camp site
□ Fry rearing and tagging site
Lingfield Creek
Chilko River
Canoe Crossing
T4 & WD3
Chilko Lake outlet
Chilko Lake
N
0 1
Miles
0 1000
Metres

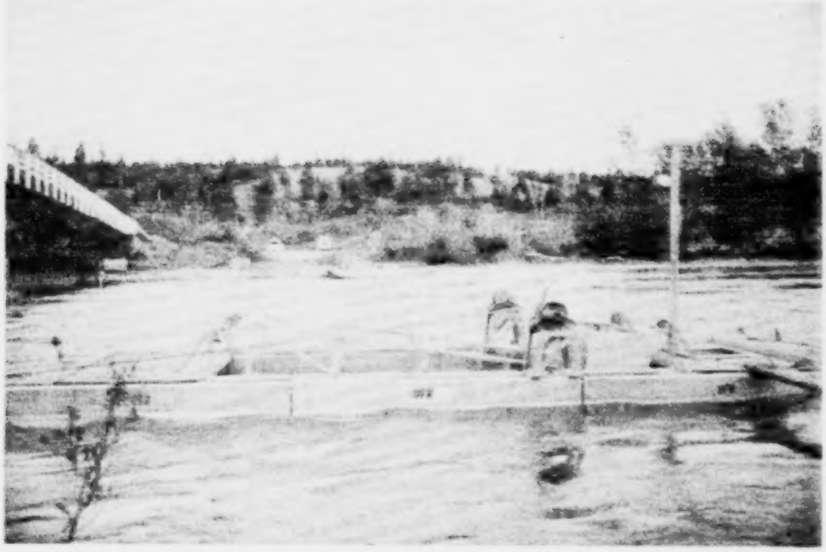


Photo 1. View from the south bank of the Chilcotin River at the Hanceville bridge showing a pair of 1.2 x 1.2 m downstream migrant traps, 1977.

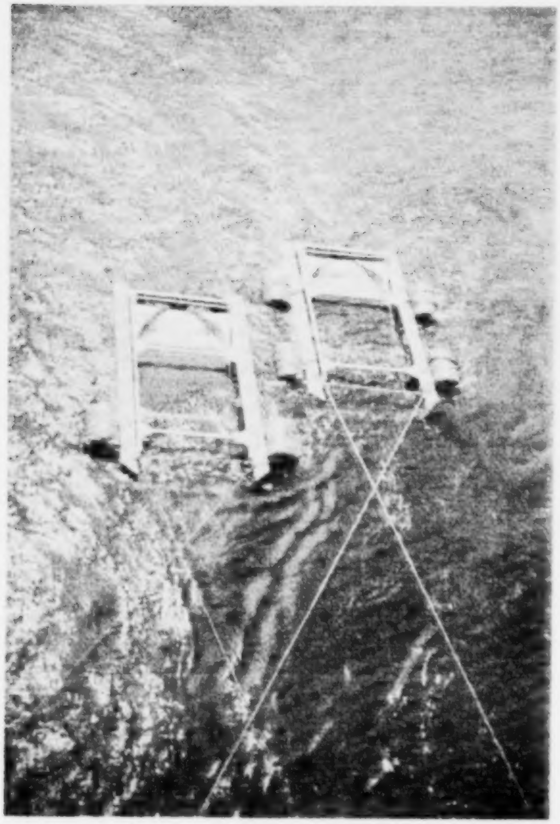


Photo 2. View from the Hanceville bridge showing 0.6 x 0.9 m downstream migrant traps in fishing position, 1977. (Barrels provided additional flotation.)

Beach seining: The Bull Canyon, Alexis Creek and Hanceville areas were seined from May 4 to July 12 (Fig. 2; Photo 3). Seined fish were enumerated and transferred to temporary holding pens prior to transport to permanent rearing facilities.

Minnow trapping: Minnow traps were fished in the Bull Canyon, Alexis Creek and Hanceville areas from May 31 to August 12 (Fig. 2). Traps were checked 2-3 times per day; traps in unproductive sites were either relocated or removed.

Chilko River (1978-1979)

During 1978 and 1979, the tagging program concentrated on the Chilko River. In 1978, one 1.2 x 1.2 m IPT and one 0.6 x 0.9 m IPT were fished at Henry's Crossing from April 21 to June 4 (IPT-2; Fig. 3), the former on the east side of the river and the latter on the west side. IPTs were fished continuously at the edge of the mainstem current, in surface velocities of 0.5-0.6 m/sec and in water depth of 1 m. Traps were checked in the morning and captured juveniles were transported to the rearing site. Depending upon the numbers trapped, fry were either counted individually, or enumerated volumetrically using a container which held a known (pre-calibrated) number of fish. A portion of some catches were released at nightfall. Traps were removed from the river when catches declined or during increases in discharge and debris.

In 1979, the 1978 trapping procedure was repeated from April 26 to May 27, with an additional 1.2 x 1.2 m IPT located near the west bank. Fry were enumerated in the same way and in addition all yearling chinook were checked for adipose excision to locate overwintering juveniles that were tagged in 1978.

Transport and artificial rearing

Chilcotin River (1977)

Transport: Captured fish were briefly held (an average of 3 h) in temporary holding facilities prior to transport to the Hanceville Bridge rearing site. Plastic buckets (23 L), set in a styrofoam insulated plywood transport box (Appendix I), were used for transport. Either battery operated aerators or an airline from a 12V compressor was used in each bucket to supply air. Approximately 3,000 chinook fry (500 fry per bucket) were transported per trip.

Rearing: In-stream rearing pens were constructed from 0.9 x 1.8 m ABS pipe frame and 4.8 mm mesh marquisette net (Appendix II; Photo 4). A maximum of 9 pens were used for rearing and approximately 5,000 to 6,000 fry were held in each pen. Screened plywood covers provided shade. Moribund fish were removed daily from each pen and examined for external disease symptoms.

The initial rearing site was immediately downstream from the Hanceville bridge, near the north bank (Fig. 2). Plywood in-stream raceways (Appendix III) were sand-bagged into place to provide a controlled unidirectional flow to the rearing pens. Due to rising water levels on June 13, the rearing site was moved 0.25 km downstream from the Hanceville bridge.

Weekly subsamples of chinook fry were anaesthetized, weighed and measured to determine growth and food requirements. Chinook fry were hand fed Oregon Moist Pellets (OMP) according to a standard hatchery feeding schedule (Appendix IV); however, the daily ration was increased to compensate for food lost due to drift, and to encourage saturation feeding.

Daily specific growth rates (SGR) and condition factors (K), from Brown (1957) and Leitritz and Lewis (1976), respectively, were calculated from the formulae:

$$SGR = \frac{\ln(l_2) - \ln(l_1)}{t_2 - t_1} \times 100\%$$

where: l = fork length (mm)
t = time in days ($t_2 > t_1$)

$$K = \frac{w \times 10^5}{l^3}$$

where: w = weight (g)
l = length (mm)

Chinook fry were reared for varying periods of time before tagging. Fry captured from April to early June were reared for approximately 6 to 8 weeks, whereas those captured in late June and July were tagged and released within approximately 3 weeks.

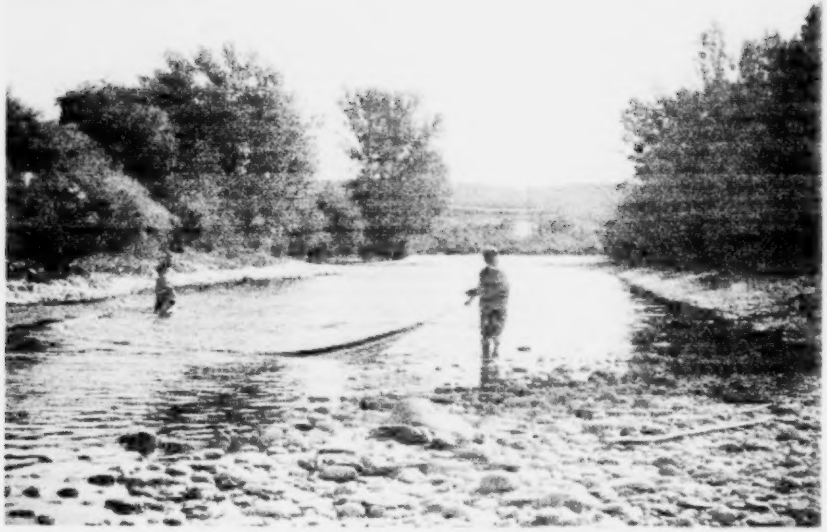


Photo 3. Beach seining a side channel of the Chilcotin River, upstream from Bull Canyon, 1977.

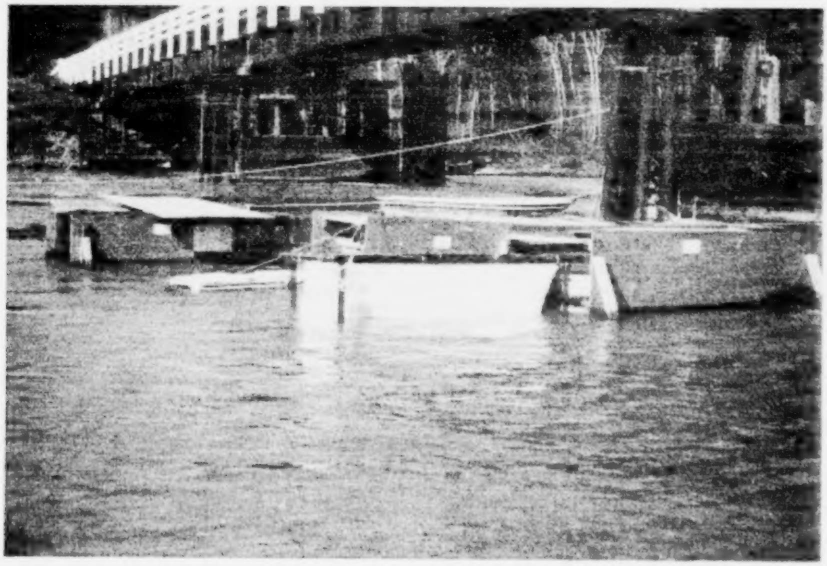


Photo 4. In-stream raceways and rearing pens at Hanceville bridge, 1977.

Yearling chinook captured from April 28 to July 2 were held for a maximum of 15 days before tagging. Rainbow trout taken incidentally from April 29 to August 12 were also held for a short period before tagging. Both were fed OMP during holding.

From June 2 to 9, fry were treated with sulfamerazine (0.22g/kg fish/day) to control an outbreak of peduncle disease. A sample of 30 fry with deteriorated lower jaws was preserved in formalin for diagnosis and shipped to DFO Diagnostic Service personnel, Pacific Biological Station, Nanaimo.

Chinook fry and yearlings and rainbow trout were occasionally sampled for size on the day of their capture. Scale smears were taken from some yearling and rainbow trout for age analyses.

Chilko River (1978-1979)

Transport: In 1978, chinook fry were initially captured and reared in a side channel at Henry's Crossing. However, increased mortalities, coincident with elevated water temperatures and algal proliferation, prompted fry relocation on May 19 to a rearing site at the Chilko Lake outlet (Fig. 3). A Bell 206 helicopter, carrying a 400 L fire bucket, transported up to 30,000 fry per trip in a 6 minute flight. Subsequent fry catches at Henry's Crossing were transported using equipment deployed in 1977 on the Chilcotin River.

In 1979, chinook fry were transported 13 km by vehicle from Henry's Crossing to the Chilko Lake outlet rearing site using a rectangular 180 L polyethylene tank. The tank was modified to hold 4 nets; 19,000 fry were transported during a 45 minute trip.

Rearing: In 1978, fry were initially reared in-stream in pens within plywood raceways similar to the 1977 Chilcotin River design. Up to 20 pens were used simultaneously, and the number of fry per pen ranged from 6,000 to 13,000, with an average of 9,000 to 10,000. Raceways were later removed, and fry were reared in pens. From April 21 to May 18, fry were reared in a side channel located a short distance downstream of Henry's Crossing bridge. From May 19, until completion of tagging on July 23, fry were reared near the west bank of the Chilko Lake outlet.

In 1979, fry were reared at the Chilko Lake outlet in rearing pens from late April to mid-June and a floating raceway from mid-June to mid-July. The raceway (1.2 x 2.4 x 6.0 m) was constructed of 20 gauge vinyl with marquisette ends, strung on a log frame and contained 42,800 fry. Up to 18 rearing pens were used, each holding 8,800 to 11,900 fry.

The pens and raceway were brushed clean daily and all dead and moribund fry were removed. Pens were covered with screened plywood to provide shade and protection. The raceway was covered with woven wire and marquisette netting. In 1978 and 1979, a screen fence was constructed immediately upstream from the rearing site to divert debris.

In 1978 and 1979, chinook fry feeding schedules were similar to the 1977 program. Subsamples of fry were anaesthetized, measured and weighed weekly. In 1978, naturally rearing chinook fry were sampled only once to compare their size to pen reared fry; in 1979, no naturally rearing fry were sampled.

Coded wire tagging and release

Juveniles were adipose fin clipped and coded wire tagged using the Bergman-Jefferts apparatus, as described by Argue and Armstrong (1977).

Chilcotin River (1977)

Chinook fry and yearlings and juvenile rainbow trout were tagged and released 0.25 km downstream from the Hanceville bridge rearing site. A platform was constructed to provide a stable work area during tagging (Photo 5).

Chinook fry were tagged from July 1 to 7, July 22 to 23 and August 4 to 12. Generally one tagging machine was in operation, except from July 5 to 7 when two machines were used. Fish were held 24 to 48 h after tagging, and from 130 to 400 fry were subsampled daily for tag loss with a Quality Control Device. Yearling chinook were tagged May 8, May 23 and June 6, while rainbow trout juveniles were tagged August 8 to 9. All yearling chinook and rainbow trout were checked for tag loss and if necessary, retagged. Tagged fish were released in darkness and remaining mortalities were enumerated.

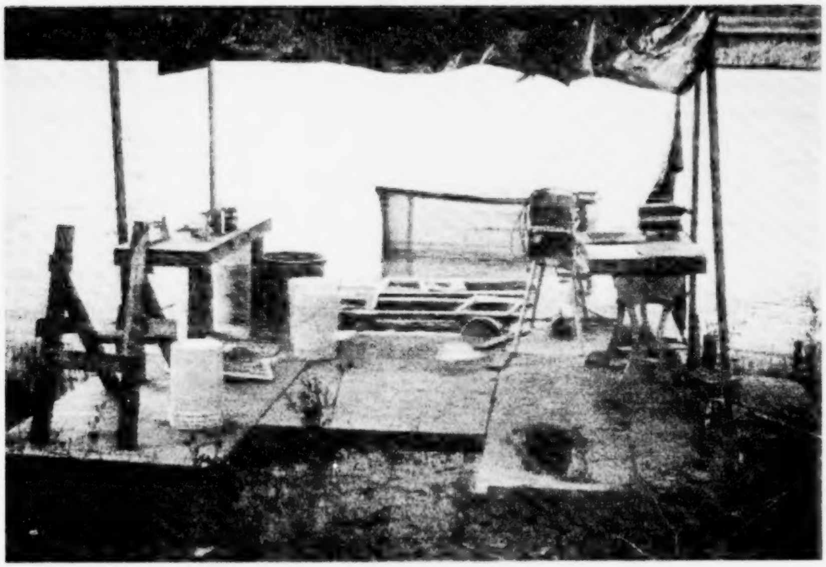


Photo 5. Tagging platform on the north side of the Chilcotin River 0.25 kilometre downstream from the Hanceville bridge, 1977.

Chilko River (1978-1979)

A tagging platform was constructed near the rearing pens at the outlet of Chilko Lake. In 1978 and 1979, juvenile chinook were tagged from July 7 to 23 and July 5 to 16 respectively, utilizing two tagging machines. Fish were held for approximately two days to determine related mortality, and from 200 to 733 juveniles were subsampled daily for tag loss.

In 1978, tagged fish were transported in floating net pens to the outlet of Canoe Crossing (4 km downstream from the Chilko Lake outlet). They were released at dusk to reduce predation and ensure release in an area normally inhabitated by chinook juveniles. In 1979, juveniles were released at dusk a short distance downstream from the rearing site.

SPAWNING CHINOOK STUDIES

Escapement and distribution of spawners

From 1975 to 1980, various areas of the Chilcotin River watershed were surveyed to determine the spawning timing, escapement and distribution of chinook spawners. From 1975 to 1979, DFO personnel enumerated chinook in major holding and spawning areas by helicopter, observation from high bluffs above spawning areas, boat, foot and snorkel diver surveys.

In 1980, E.V.S. Consultants Ltd. utilized a Bell 206 helicopter to document instream distribution and to estimate spawner escapement. Stream sections were established by E.V.S. Consultants Ltd. on the basis of stream morphology, accessibility and relative importance as chinook spawning areas (Figs. 4-7). Previous data collected by the DFO were generally aligned to these subdivisions. Observations included enumeration, distribution of holding, spawning and spent chinook, redd counts and predatory activity. Escapement was determined during the reconnaissance by actual aerial count of live and dead fish during peak spawning. Actual aerial censuses were adjusted upward by 30 - 40% to account for enumerative error associated with the methodology.

Figure 4. Chilko River, illustrating river sections and spawning chinook distribution and density.

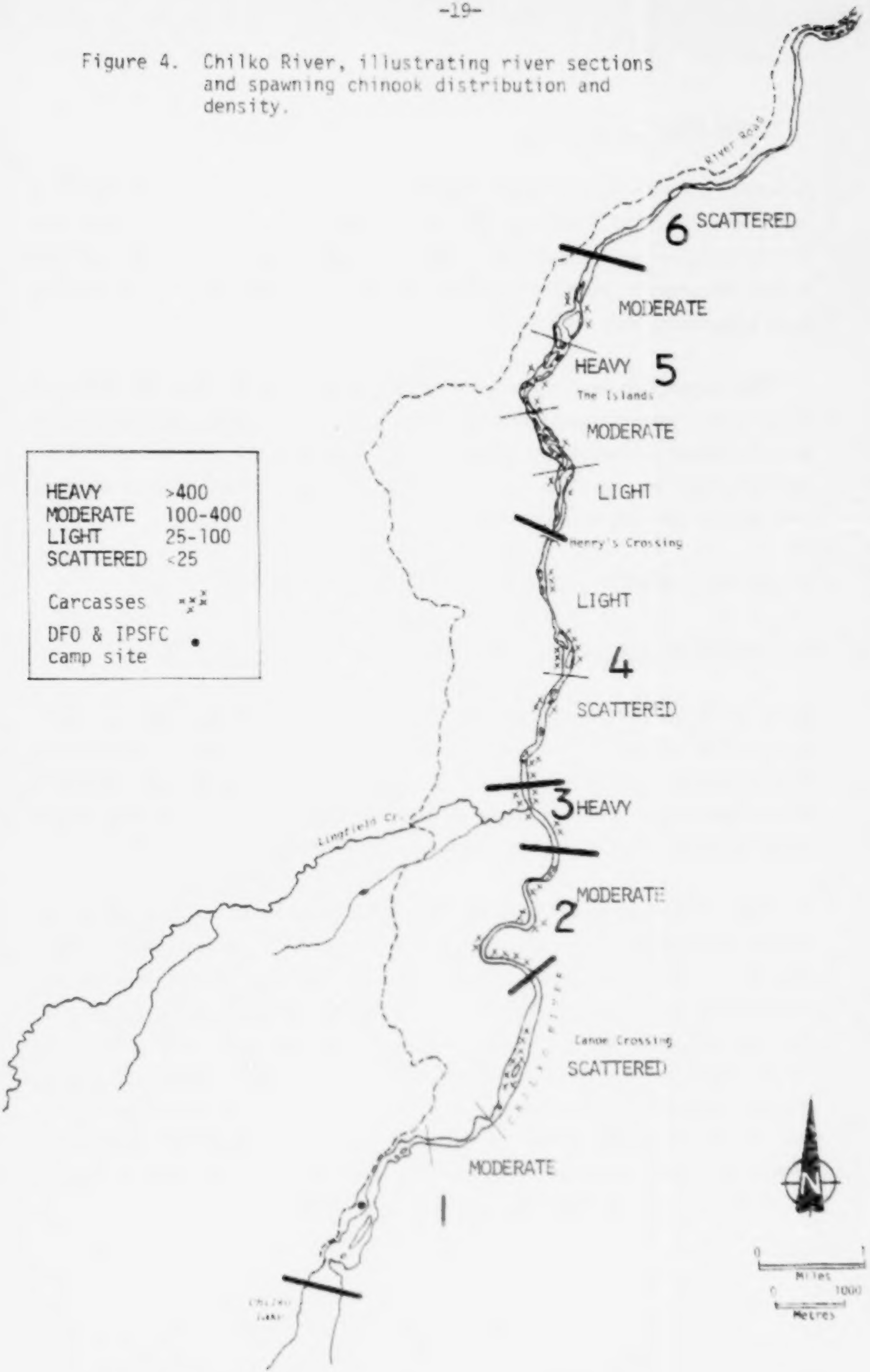

River Road
6 SCATTERED
MODERATE
HEAVY 5
The Islands
MODERATE
LIGHT
Henry's Crossing
LIGHT
4
SCATTERED
3 HEAVY
Lingfield Cr.
MODERATE
2
Canoe Crossing
SCATTERED
Chilko River
MODERATE
1
Chilko Lake
HEAVY >400
MODERATE 100-400
LIGHT 25-100
SCATTERED <25
Carcasses
DFO & IPSFC camp site
N
0
1
Miles
0
1000
Metres

Figure 5. Upper Chilcotin River, illustrating river sections and spawning chinook distribution and density.

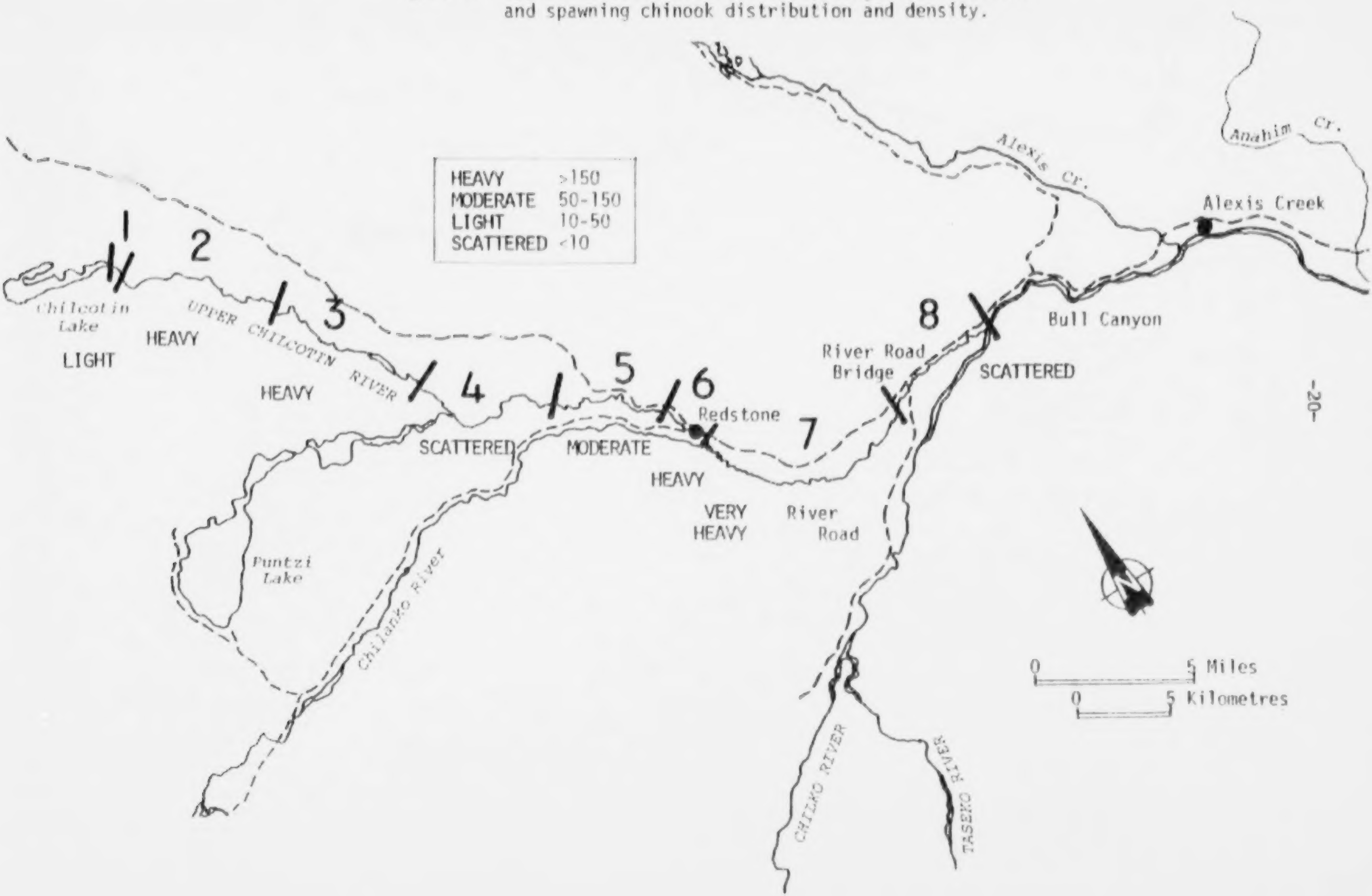

HEAVY >150
MODERATE 50-150
LIGHT 10-50
SCATTERED <10
1
2
3
4
5
6
7
8
Chilcotin Lake
LIGHT
HEAVY
UPPER CHILCOTIN RIVER
HEAVY
SCATTERED
MODERATE
HEAVY
VERY HEAVY
Redstone
River Road Bridge
River Road
SCATTERED
Bull Canyon
Alexis Cr.
Anahim Cr.
Alexis Creek
Puntzi Lake
Chilanko River
CHILKO RIVER
TASEKO RIVER
N
0
5 Miles
0
5 Kilometres

Figure 6. Elkin Creek, illustrating river sections and spawning chinook distribution and density.

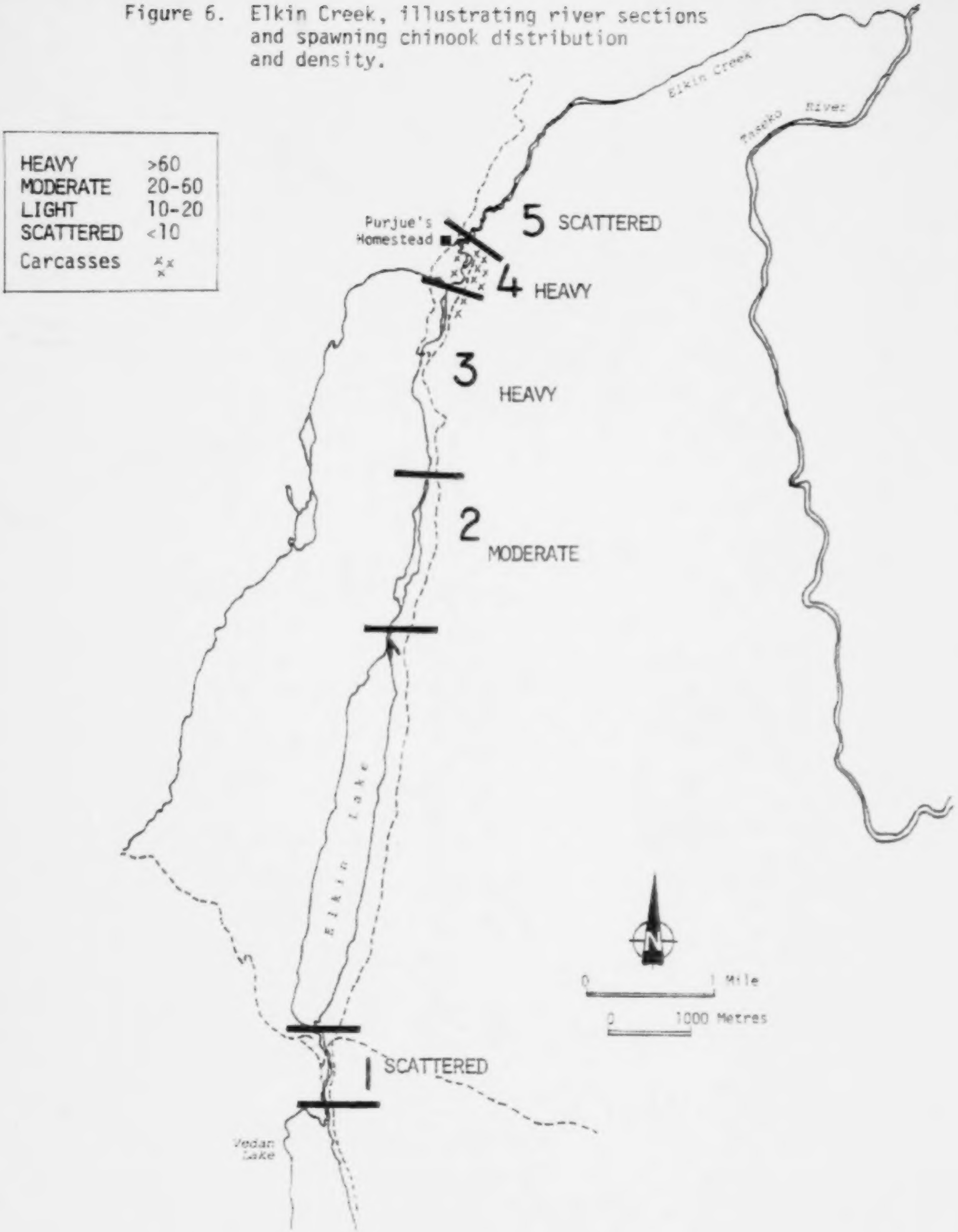
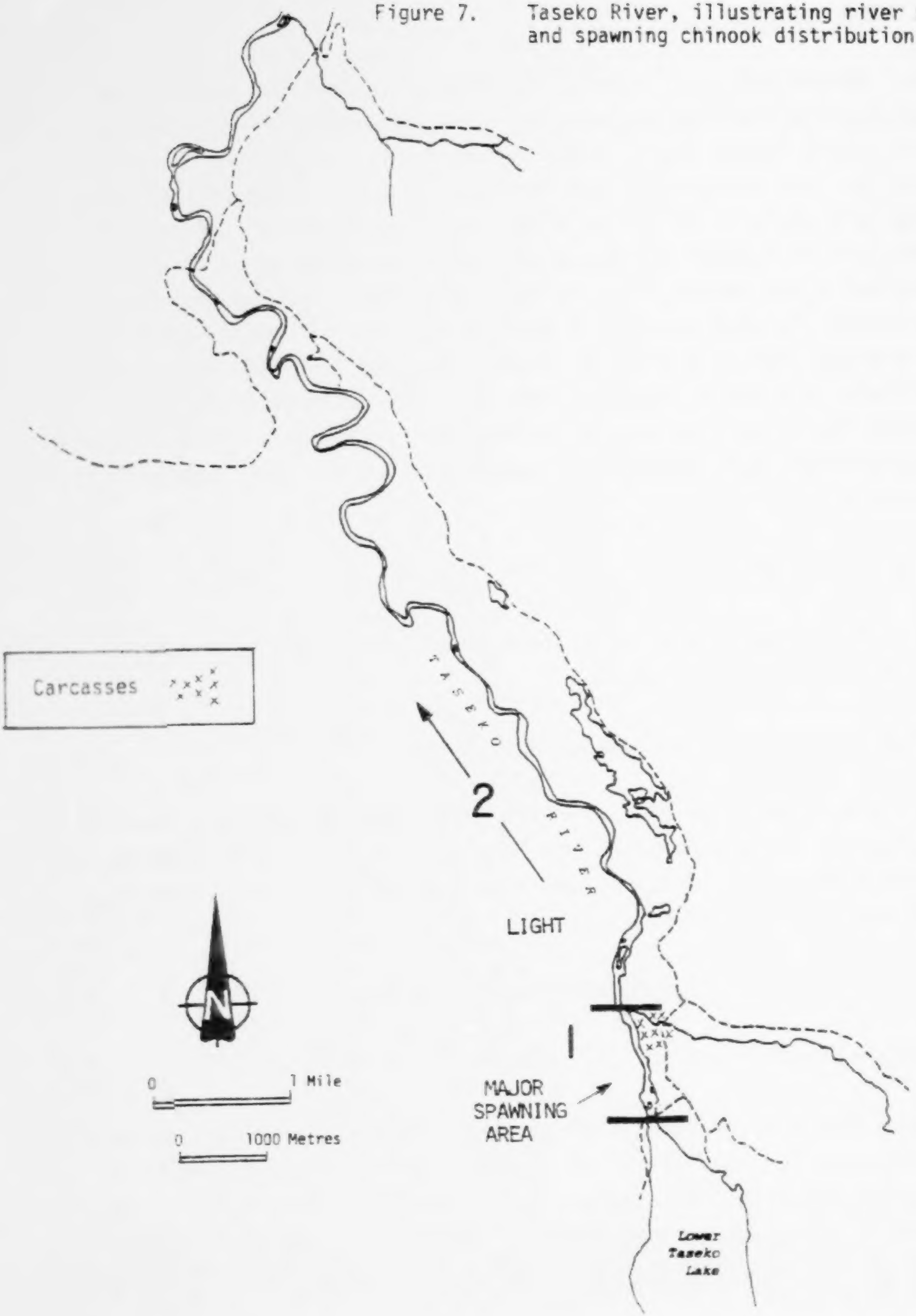

HEAVY >60
MODERATE 20-60
LIGHT 10-20
SCATTERED <10
Carcasses
Elkin Creek
Taseko River
Purjue's Homestead
5 SCATTERED
4 HEAVY
3 HEAVY
2 MODERATE
1 SCATTERED
Elkin Lake
Vedan Lake
N
0 1 Mile
0 1000 Metres

Figure 7. Taseko River, illustrating river sections and spawning chinook distribution and density.


Carcasses
TASEKO RIVER
2
LIGHT
1
MAJOR SPAWNING AREA
0
1 Mile
0
1000 Metres
N
Lower Taseko Lake

Carcass sampling

Moribund and dead chinook were recovered on and downstream of spawning areas during boat and foot surveys. Sampling effort increased as die-off progressed, and carcass recovery was generally concentrated in areas of major spawning activity. The sex and flesh color was determined for each carcass and the abdominal cavity of all carcasses was opened by incision of the belly to determine the degree of spawning success (number of retained eggs in females or 'fullness' of the testes in males) as conditions permitted (i.e. decomposition, predation). The postorbital-hypural length (POHL; ± 0.5 cm) was recorded using a measuring stick. Five scales were randomly removed from each side from the preferred dorso-lateral region to avoid repetitious selection of resorbed or regenerated scales, and mounted on numbered gummed scale cards. Age determinations were completed by personnel of the DFO Scale Laboratory, Vancouver.

Fecundity sampling

In 1979, a limited attempt was made to determine fecundity by angling and tangle-netting unspawned females.

Carcass examination for coded wire tag recovery

In 1979 and 1980, heads were collected from carcasses with partial or missing adipose fins to check for tag returns from the 1977 to 1979 CWT programs. Heads were stored in formalin and delivered to the DFO Laboratory, Vancouver, for detection of implanted tags.

RESULTS AND DISCUSSION

STREAM DESCRIPTIONS AND PHYSICAL/CHEMICAL MEASUREMENTS

The physical/chemical characteristics of various sampling sites on the Chilcotin River system between 1975 and 1978 are summarized in Appendix V. Results of nutrient, residue and metal analyses of water samples collected in 1979 at the outlet of Chilko Lake are summarized in Appendix VI. In general, the surface water quality results conformed to the accepted limits for aquatic life (Environmental Protection Agency, 1976), and present no limitation to salmonid culture.

Daily measurements of mean, maximum and minimum water temperature, discharge and relative water height for the Upper Chilcotin, Chilcotin and Chilko Rivers from April 29 to August 15, 1977 are presented in Appendix VII and illustrated in Figures 8a and 8b. Similarly, maximum, minimum and mean water temperature and discharge for the Chilko River from April 21 to July 27, 1979 and 1980 are presented in Appendix VIII and illustrated in Figures 9a and 9b.

In 1977, mean daily water temperature at Hanceville bridge ranged from 8.0°C in May to 16.0°C in August (Fig. 8a); with minimum/maximum extremes of 6.5 to 13.0°C in May and 12.5 to 16.5°C in August. Upstream at the River Road bridge, above the Chilko River confluence, daily water temperature averaged 1.4°C warmer, ranging from 8.0°C in May to 20.0°C in August. Minimum/maximum extremes of 7.0 to 13.0°C occurred in May and 15.5 to 22.0°C in August. This temperature difference appears to reflect the input of the colder Chilko and Taseko rivers

In 1978, mean daily water temperature recorded at Henry's Crossing on the Chilko River ranged from 5.0°C in April to 14.8°C in July; with minumum/maximum extremes of 2.5 to 10.0°C in April and 11.0 to 16.0°C in July. Temperatures recorded at the same site in 1979 averaged 1-3°C cooler, ranging from 5.0°C in May to 13.0°C in July; with minimum/maximum extremes of 4.0 to 9.5°C in May and 8.0 to 14.0°C in July. Temperatures taken at the outlet of Chilko Lake from May to June, 1979, were generally higher than at Henry's Crossing (Fig. 9a).

In 1977, the daily discharge of the Chilcotin River throughout May decreased from 116 to approximately 83 m^3/sec, while the Chilko River discharge increased from 40 to 60 m^3/sec (Fig. 8a). After the first week in June, the discharge of the Chilcotin and Chilko rivers increased rapidly from 95 to 224 m^3/sec and 69 to 193 m^3/sec, respectively. Throughout July and August, the Chilcotin River discharge fluctuated from 190 to 282 m^3/sec and the Chilko River discharge from 163 to 264 m^3/sec (Fig. 8b).

Figure 8a. Mean water temperature, Chilcotin River, May 6-August 13, 1977.

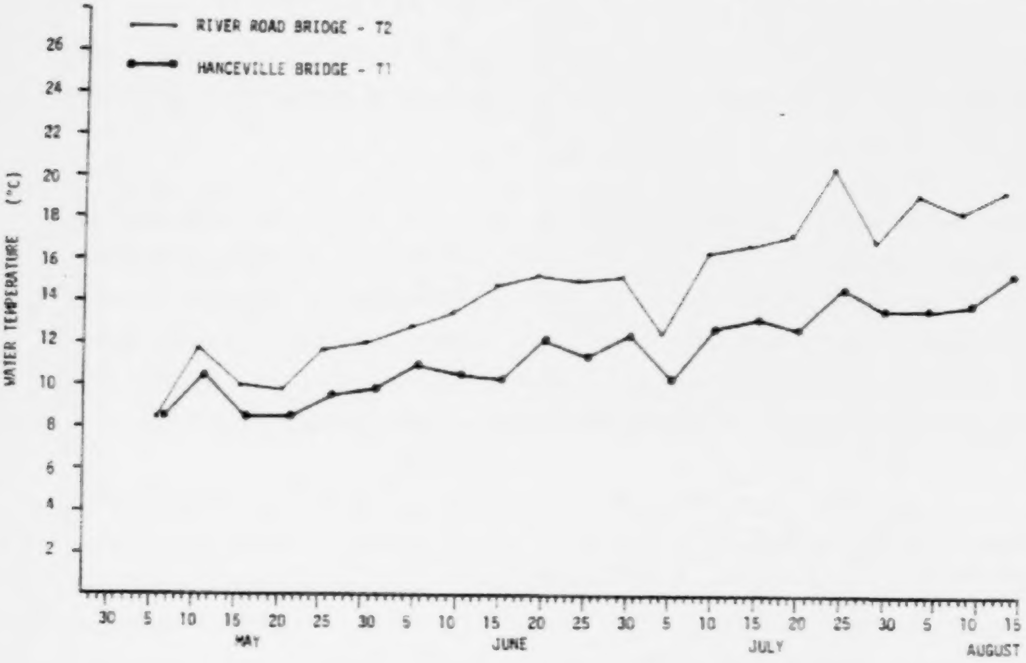


Figure 8b. Daily discharge, Chilcotin and Chilko Rivers, April 28-August 10, 1977.

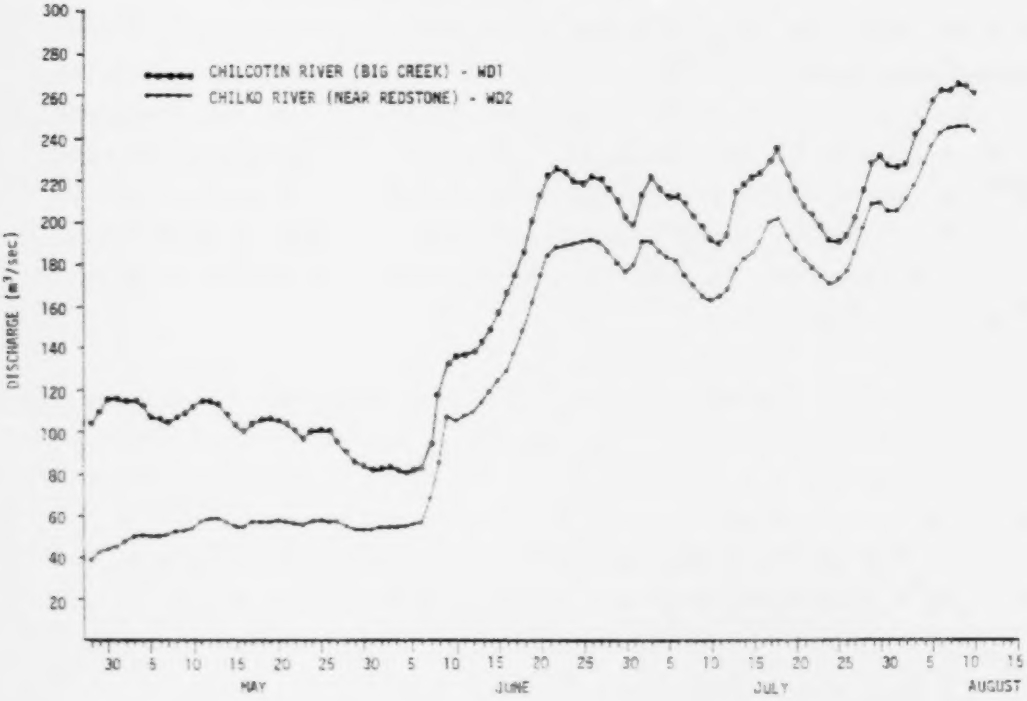


Figure 9a. Mean water temperature, Chilko River, April 21-July 20, 1978 and April 30-July 27, 1979.

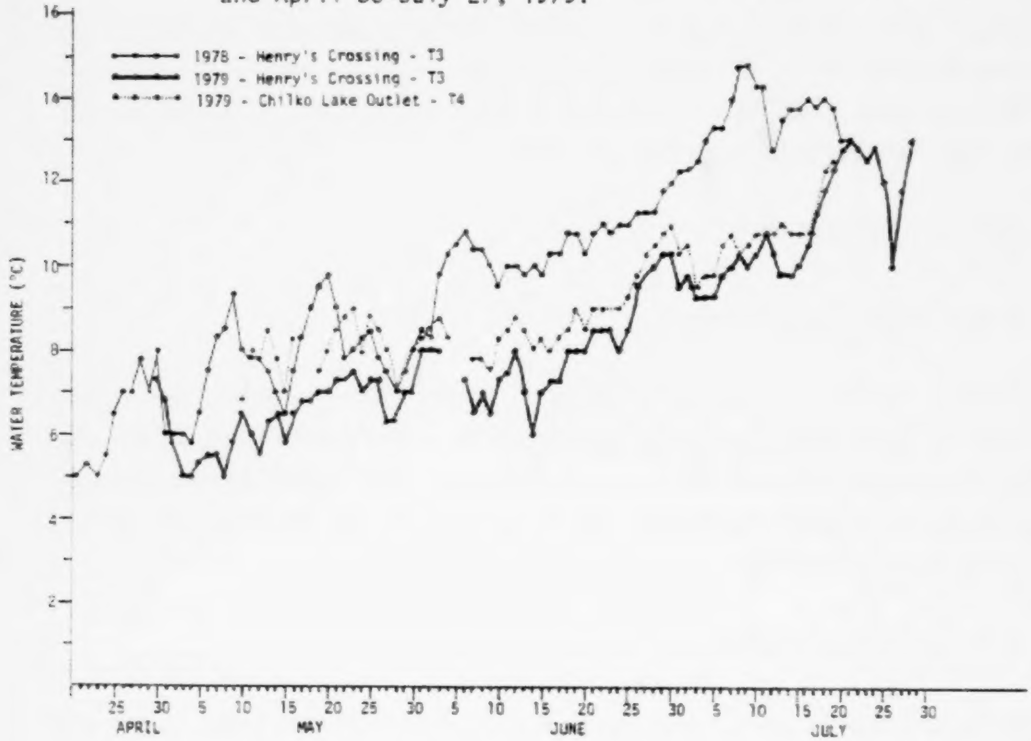
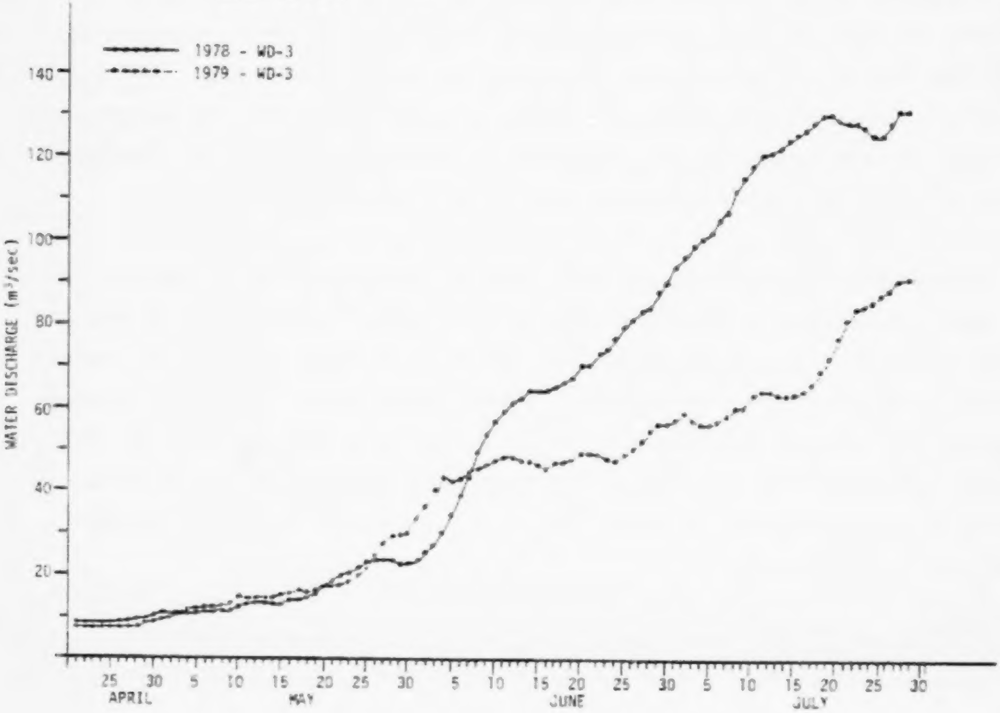


Figure 9b. Daily discharge, Chilko River, April 21-July 27, 1978 and 1979.



During 1978 and 1979, the Chilko River discharge increased gradually from approximately 7 to 20 m^3/sec until late May (Fig. 9b). During freshet, discharge increased from 23 m^3/sec in late May to 131 m^3/sec in July, 1978, and from 21 to 91 m^3/sec during the same period, 1979.

JUVENILE CHINOOK STUDIES

Juvenile chinook reconnaissance (1975-1979)

Juvenile chinook reconnaissance of the Chilcotin River drainage during fall spawning ground surveys provided data which described the distribution, age and length of rearing chinook juveniles. Catches for study years are presented by watercourse, sampling method and site in Appendix IX; age and length results are summarized in Appendix X.

Chilko River (1975-1979)

During fall reconnaissance from 1975 to 1979, few juvenile chinook were taken by minnow trap between the outlet of Chilko Lake and Henry's Crossing. Juveniles were seined in August, 1976 at Canoe Crossing and in September, 1977 at Lingfield Creek. Minnow trapping at the islands 1-3 km downstream of Henry's Crossing produced juvenile chinook (Appendix IX); both young-of-the-year and yearlings were captured. Two juveniles taken in September, 1977 were age 1+, and would likely migrate the following spring at age 2+. The remainder were young-of-the-year. Beach seining from Canoe Crossing to Henry's Crossing from 1976 to 1978 produced small numbers of underyearling chinook.

In August, 1978, minnow trapping to monitor movements and distribution of CWT fry produced catches at the Chilko lake outlet, Canoe Crossing and the islands below Henry's Crossing (Appendix IX). Marked fish were found in all areas sampled. The majority were recovered at the islands which indicated a general downstream movement of tagged fish. Fry captured upstream of the 1978 release site (the outlet of Canoe Crossing) were either those which escaped during the helicopter transport from Henry's Crossing, the tagging operation, or were upstream migrants.

In 1979, 94 of 141 juveniles (66.7%) sampled during late July to late August at the Chilko Lake outlet were marked (Appendix IX). Minnow trapping from August 11 to 13 in the Lingfield spawning area, Henry's Crossing and the Taseko-Chilko River confluence produced no juvenile chinook. From August 24 to August 27, several unmarked chinook were taken by minnow trap at Henry's Crossing; 2 underyearling chinook (one marked) were trapped at Canoe Crossing, and several marked and unmarked fry were captured at Chilko Lake outlet. From late July to late August, 39 of 51 underyearling chinook (76.5%) captured as far as 3.2 km upstream of the lake outlet were marked. As in 1978, the majority of unmarked fry captured at the lake outlet in 1979 were either fish which escaped during transport, rearing and tagging, or were upstream migrants.

Chilcotin River (1976-1979)

Chinook juveniles trapped from the Chilcotin River were probably from Chilko, Upper Chilcotin and Taseko rivers, and Elkin Creeks, since chinook reproduction in the mainstem Chilcotin River is infrequent and spawners are limited in number.

The capture of juvenile chinook in August and September from 1976 to 1979 suggests that these fish may overwinter in the Chilcotin River (Appendix IX). Spawner scale samples confirmed the occurrence of stream-type chinook (ages 3_2, 4_2 and 5_2) in the Chilcotin River system.

Upper Chicotin River (1976-1977)

Although juvenile surveys were not extensive on the Upper Chilcotin River, rearing is probably minimal and generally confined to the lower section between the Chilko River confluence and the Redstone area (Fig. 2). In April, 1977 a yearling chinook was captured approximately 5 km upstream from the Chilko River confluence, and underyearlings were trapped near the River Road bridge in August, 1976, and the Redstone area in July to September, 1977. However, no juveniles were trapped as far upstream as Chezacut or near the outlet of Chilcotin Lake in late September, 1976 (Appendix IX).

The Upper Chilcotin River freshets earlier than adjacent watercourses, and it is possible that many chinook fry are either swept downstream or migrate to rearing areas in the mainstem Chilcotin River. The Upper Chilcotin River has extensive rearing areas available following the spring freshet.

Only two juveniles from the Upper Chilcotin River were sampled for length and age (Appendix X), and their growth was comparable to other streams in the Chilcotin River system.

Taseko River (1977-1978)

During August, 1977 and September, 1978, juvenile chinook rearing near the Taseko Lake outlet were captured by beach seine and minnow trap (Appendix IX). Juvenile chinook sampled in 1977 and 1978 were age 0+, and ranged from 56 to 83 mm in length (Appendix X).

Trapping studies near the mouth of Taseko River in 1959 and 1960 (DFO unpubl. data) indicated a downstream movement of chinook young-of-the-year from mid-May to mid-June. A few yearling chinook were also taken in mid-May in 1959, while approximately 300 yearling chinook were trapped from early to mid-May during 1960. These data suggest overwintering in the Taseko Lake area.

Elkin Creek (1977-1978)

In August, 1977 and September, 1978, minnow trapping surveys were conducted on Elkin Creek, near Elkin and Vedan lakes (Appendix IX). Although typical chinook rearing areas were evident, no chinook juveniles were captured.

Lord River, Chaunigan Lake, and Chilanko River

No chinook juveniles were found during a survey of Lord River and Chaunigan Lake in August, 1977 (Appendix IX). Although chinook salmon have never been reported in these waters, typical chinook rearing areas exist. Chaunigan Lake appeared extremely productive; 2,000-3,000 juvenile rainbow trout were captured in one seine set.

Low numbers of chinook adults have been reported spawning in the Chilanko River and potential rearing areas are common. However, no juvenile chinook were found minnow trapping in the Chilanko River in late September, 1977.

Coded wire tagging program (1977-1979)

Catches

Chilcotin River (1977)

From April 28 to August 12, 1977, a total of 80,687 underyearling chinook, 1,065 yearling chinook and 1,199 juvenile rainbow trout were captured from Bull Canyon to Hanceville (Table 1). IPTs were fished continuously throughout the program, with beach seining and minnow trapping deployed opportunistically.

Each capture method (IPT, seine, minnow trap) was efficient at various times throughout the study, as a function of discharge, habitat type and fish size. Following emergence and peak downstream migration, the effectiveness of the IPTs diminished, seining and minnow trapping became the most productive method of capture (Figs. 10-14). All capture methods were discontinued on August 12 by which time the relative efficiency of all techniqes had fallen markedly.

Inclined plane trapping: From April 28 to August 7, a total of 13,249 underyearling chinook, 842 yearling chinook and 271 juvenile rainbow trout were captured by IPT at Hanceville bridge (Fig. 2; Appendix XI); these totals represented 16.4%, 79.1% and 22.6% of the respective 1977 catch from the Chilcotin River by all capture methods (Table 1). Daily catches indicated that downstream movement commenced prior to trapping initiation on April 28. Peak migration occurred May 13-14, and few chinook were caught after the end of June (Fig. 11). Yearling chinook were captured from April 28 to August 4 (Fig. 11) usually in darkness, and on the edges of mainstem currents. Cumulative catches showed that underyearling chinook emigration was 50% complete by May 14, and 95% complete by June 18 (Fig. 12). In general, catches were greatest near banks (removed from the direct mainstem current) in a flow of approximately 0.3 m/sec.

TABLE 1

SUMMARY OF CHINOOK AND RAINBOW TROUT CAPTURED IN
THE CHILCOTIN RIVER (1977) AND THE CHILKO RIVER (1978 & 1979)
BY INCLINED PLANE TRAPS, BEACH SEINING AND MINNOW TRAPS

RIVER	TRAPPING METHOD	CHINOOK 0+	CHINOOK 1+	RAINBOW TROUT
Chilcotin River -1977-	IPT			
	4x4 No. 1	9,964	784	213
	4x4 No. 2	1,025	25	48
	2x3 No. 1	1,498	23	7
	2x3 No. 2	762	10	3
		Σ 13,249	842	271
		% 16.2	79.1	22.6
	Beach seining	Σ 28,691	221	52
		% 35.1	20.8	4.3
	Minnow trapping	Σ 39,756*	2	876
		% 48.7	0.1	73.1
		ΣΣ 81,696.	1,065	1,199
Chilko River -1978-	IPT			
	4x4 No. 1	48,446	1	34
	2x3 No. 1	209,523	4	10
		Σ 257,969	5	44
Chilko River -1979-	IPT			
	4x4 No. 1	80,515	18	77
	2x3 No. 1	185,678	2	20
	2x3 No. 2	322,335	25	50
		Σ 588,528	45	147

*Includes 1009 tagged recaptures

Figure 10. Catches of chinook fry by inclined plane trap, beach seine, and minnow trap in the Chilcotin River, April 28-August 12, 1977.

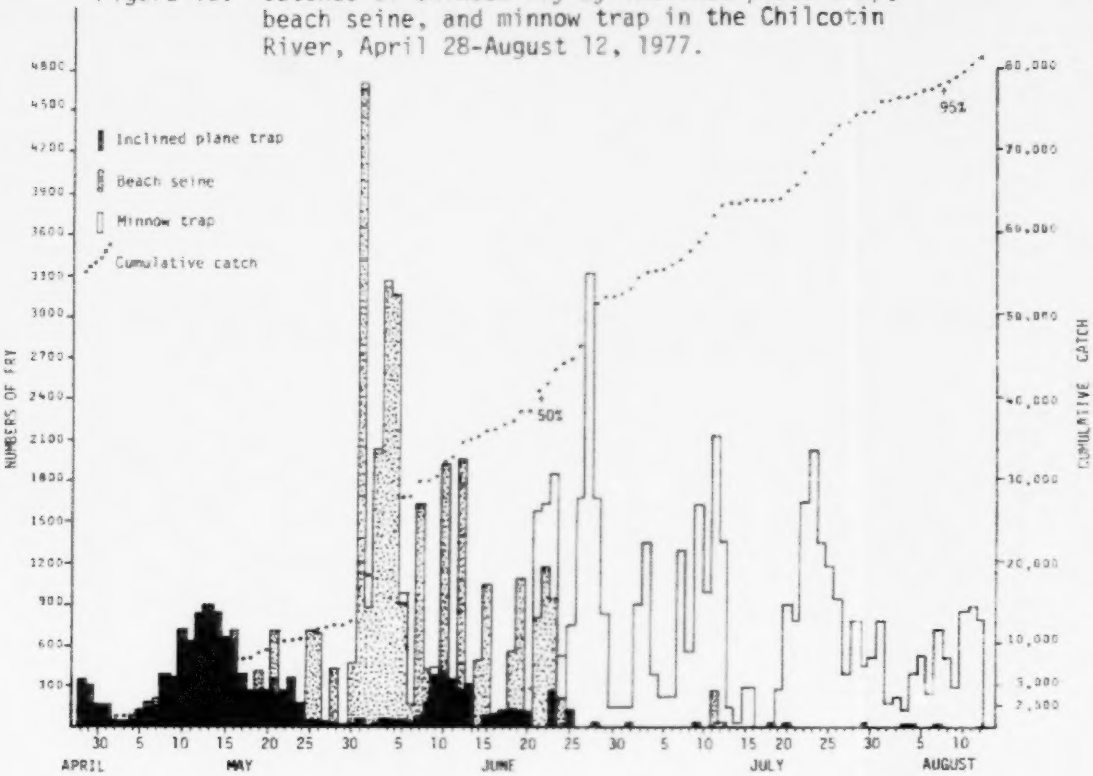


Figure 11. Nightly IPT catches of chinook fry and yearlings in the Chilcotin River, April 28-August 7, 1977.

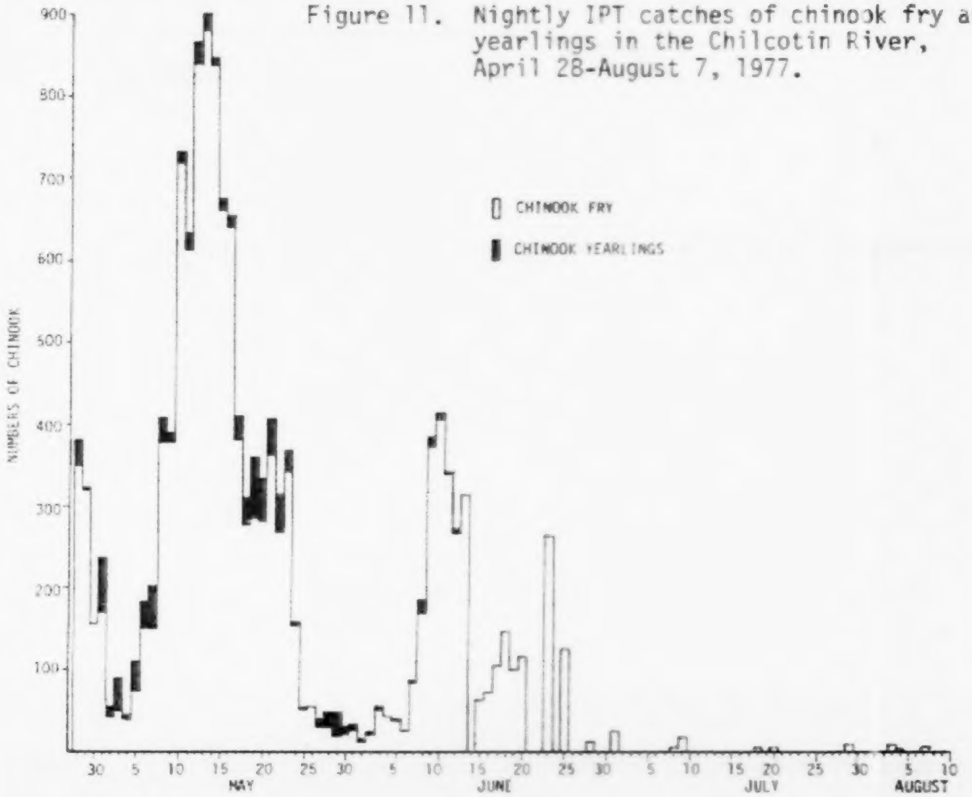
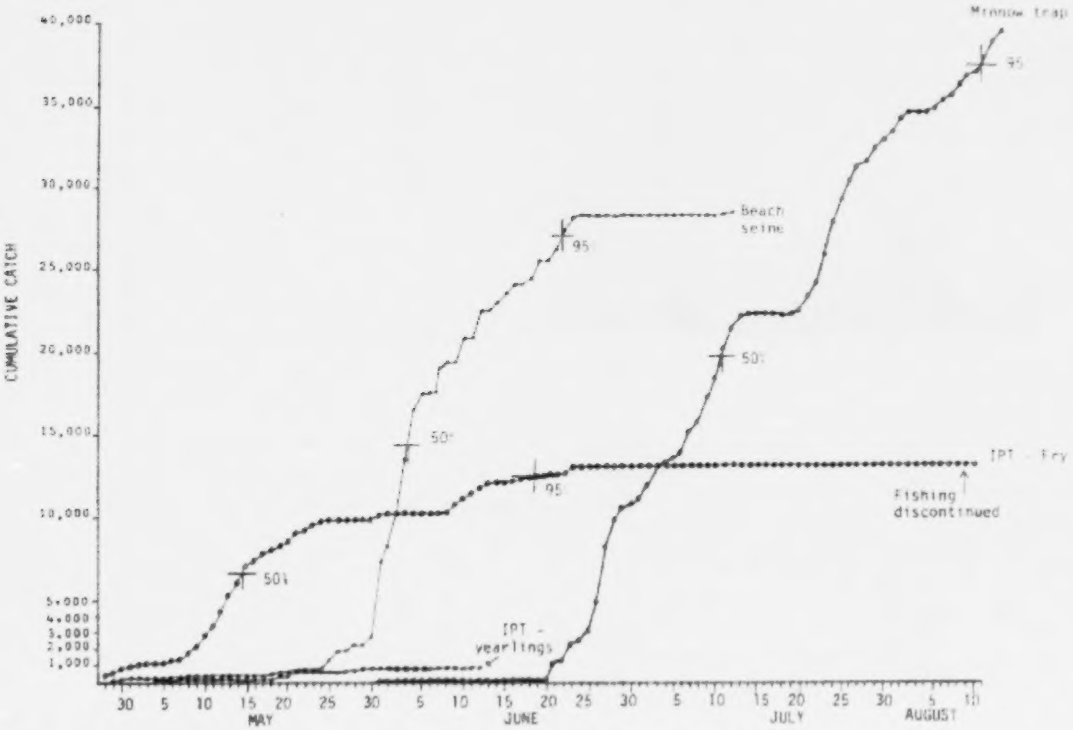


Figure 12. Daily cumulative catches of chinook fry and yearlings captured by various methods in the Chilcotin River, 1977.



Trapping-related mortality was 17.4% and 6.2% among chinook underyearlings and yearlings, respectively (Table 2), and was greatest when excessive debris entrained by the IPT caused turbulence in the live boxes.

Approximately 3,000 underyearling sockeye were taken by IPT from April 28 to May 10; the majority were trapped prior to May 2. Catches declined substantially when traps were fished along the edge of mainstem currents.

Beach seining: From May 4 to July 12, a total of 28,691 underyearling chinook, 221 yearling chinook and 52 juvenile rainbow trout were seined from Bull Canyon, Alexis Creek and Hanceville areas (Fig. 2; Appendix XII). These totals represented 35.6%, 20.8% and 4.3% of the respective catch from the Chilcotin River by all capture methods in 1977 (Table 1). Beach seining was most efficient as migration decreased and fry began to rear. Cumulative catches indicated that 50% of seined fry were captured by June 3 and 95% by June 21 (Fig. 12). The largest catches occurred in the Bull Canyon area from May 31 to June 4, with a total of 13,823 fry taken by seine (Fig. 13). The largest daily catch was 4,634 chinook fry, taken in 11 sets on May 31. Comparatively, the Bull Canyon and Alexis Creek regions were extremely productive and catch per unit of effort was high (Fig. 13). Mortality incurred during seining was low (111 fry; 0.4% of total catch).

Minnow trapping: From May 31 to August 12, a total of 39,756 chinook fry, 2 yearling chinook and 876 rainbow trout were taken by minnow trap (Appendix XIII). These totals represented 48.7%, 0.1% and 73.1% of the respective catch from the Chilcotin River by all capture methods in 1977 (Table 1). Minnow trapping proved the most productive technique to capture fry once they reached a swimming capabilty that enabled them to avoid seines, and were large enough (approximately 45 mm) to be retained by the the 6.4 mm Gee trap mesh. Large catches occurred from June 21 to July 28 (Fig. 14), primarily in the Bull Canyon and Hanceville areas, and the peak catch occurred on June 27 when 3,319 chinook fry were captured in 53 traps. Cumulative catches indicated that 50% of the total catch by minnow trap occurred on July 11, while 95% were taken by August 11 (Fig. 12). No mortality related to minnow trapping was recorded.

TABLE 2

MORTALITY OF JUVENILE CHINOOK SALMON CAUGHT BY INCLINED PLANE TRAPS AT HANCEVILLE BRIDGE, CHILCOTIN RIVER (1977) AND, HENRY'S CROSSING BRIDGE, CHILKO RIVER (1978 and 1979)

RIVER	INCLINED PLANE TRAP		CHINOOK FRY	CHINOOK SMOLTS
Chilcotin River -1977-	4x4 No. 1		2,202	49
	4x4 No. 2		84	3
	2x3 No. 1		19	0
	2x3 No. 2		4	0
		Σ	2,309	52
		%*	17.4	6.2
Chilko River -1978-	4x4 No. 1		422	0
	2x3 No. 1		1,463	1
		Σ	1,885	1
		%	0.7	20.0
Chilko River -1979-	4x4 No. 1		1,824	2
	2x3 No. 1		745	0
	2x3 No. 2		2,240	1
		Σ	4,809	3
		%*	0.8	6.7

*Percent of total captured by inclined plane trap

Figure 13. Daily catches, effort, and catch per unit effort (CPUE) for chinook fry seined from three regions of the Chilcotin River, 1977.

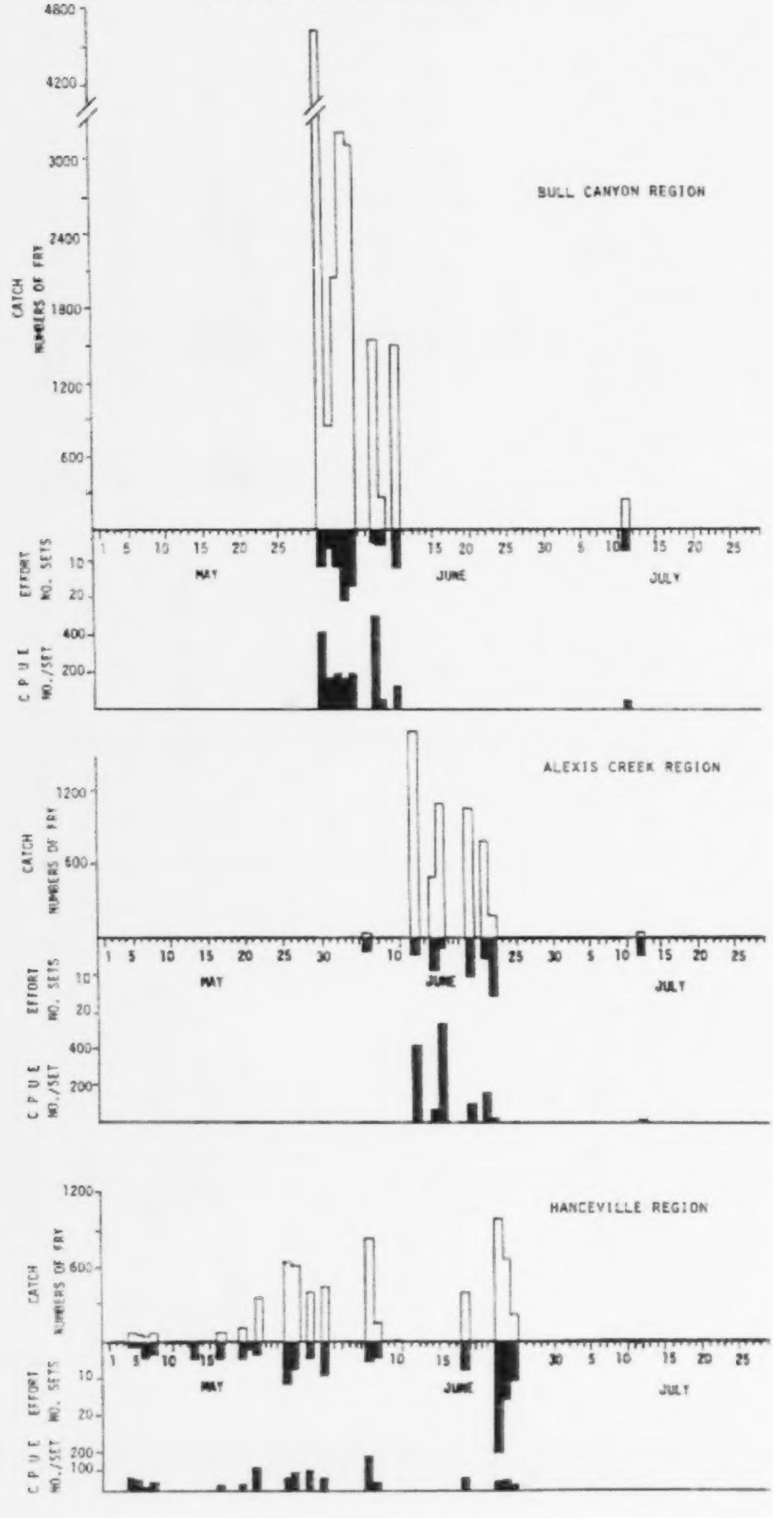
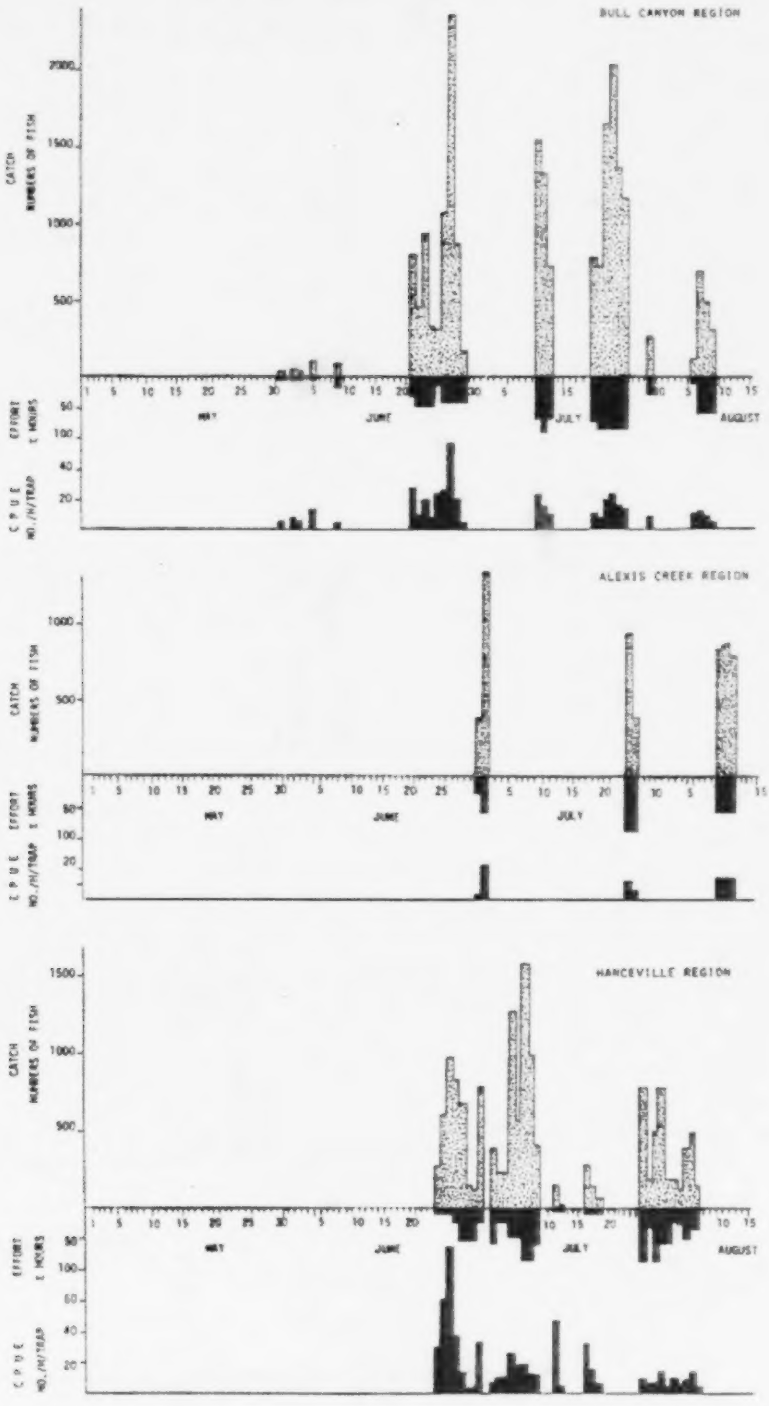


Figure 14. Daily catches, effort, and catch per unit effort (CPUE) for chinook fry minnow trapped from three regions of the Chilcotin River, 1977.



Approximately 7,000 underyearling sockeye rearing in side channels of the Chilcotin River in the Anaheim area were captured by seine and minnow trap. Other species taken included Dolly Varden char, mountain whitefish, Pacific lamprey (Entosphenus tridentatus), suckers (Catostomus spp.), redside shiner (Richardsonius balteatus) and squawfish (Ptychocheilus oregonensis).

Chilko River (1978-1979)

Inclined Plane Trapping: In 1978, a total of 257,969 underyearling chinook, 5 yearling chinook and 44 juvenile rainbow trout were captured from April 21 to June 5 at Henry's Crossing bridge (Table 1; Appendix XIV). The largest daily catch of underyearling chinook occurred on May 9-10 (33,556), and migration declined by the end of trapping in early June (Fig. 15). Fry mortality due to trapping was low (0.7%; Table 2). In addition, 2,400 underyearling sockeye and 136 yearling sockeye as well as juvenile coho, dace, suckers and squawfish, were captured by IPT.

In 1979, a total of 588,528 underyearling chinook, 45 yearling chinook and 147 juvenile rainbow trout were captured from April 26 to May 28 (Table 1; Appendix XV). Substantial catches were recorded at trapping initiation in late April (Fig. 16), and catches continued to remain large through late May when trapping was discontinued due to high discharge. The peak catch of 66,843 underyearling chinook was recorded May 14-15. Trap related mortality was low (0.8%; Table 2). Yearling chinook were generally captured in early to mid-May. Five underyearling chinook trapped were adipose fin clipped (11%), which indicated some overwintering of 1978 tagged fry upstream of Henry's Crossing. Other species captured by IPT included 19,260 underyearling sockeye, 21 yearling sockeye, several Dolly Varden char, dace, suckers, and a yearling coho.

In 1979, a second 0.6 x 0.9 m IPT was fished at Henry's Crossing bridge. In order to facilitate comparison of 1978 and 1979 data, and to normalize trap effort during these years, the 1979 catch results have been indicated which exclude the second IPT (Fig. 16). Although peak migration in 1979 was approximately one week earlier than in 1978, similar numbers of underyearling chinook were sampled by comparable effort during these years (257,969 c.f. 266,193; Table 1).

Figure 15. Nightly catches of chinook fry by inclined plane traps at Henry's Crossing, Chilko River, April 21-June 4, 1978 and April 27-May 27, 1979.

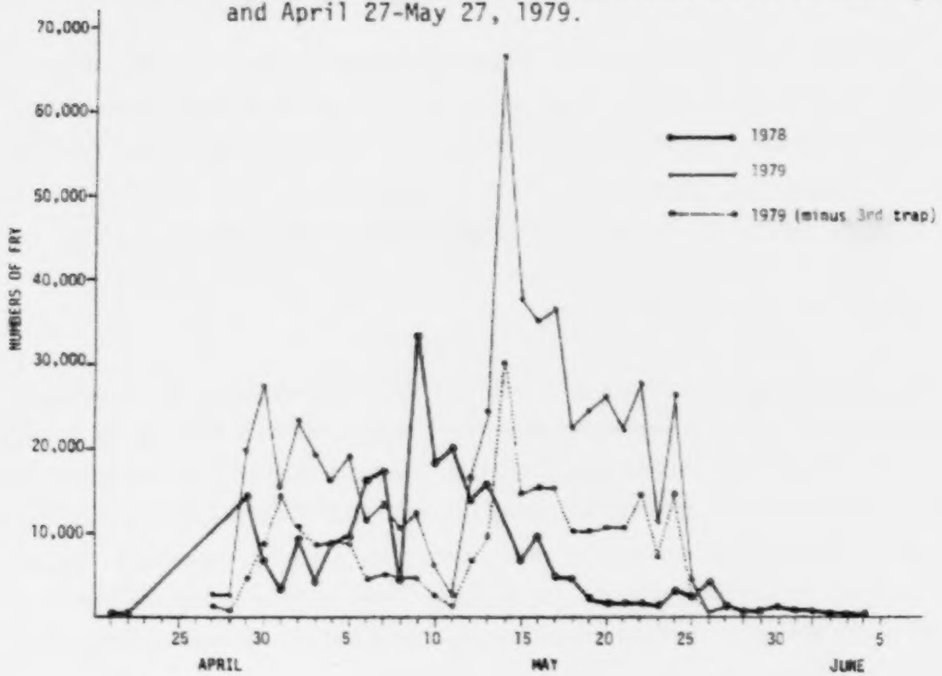
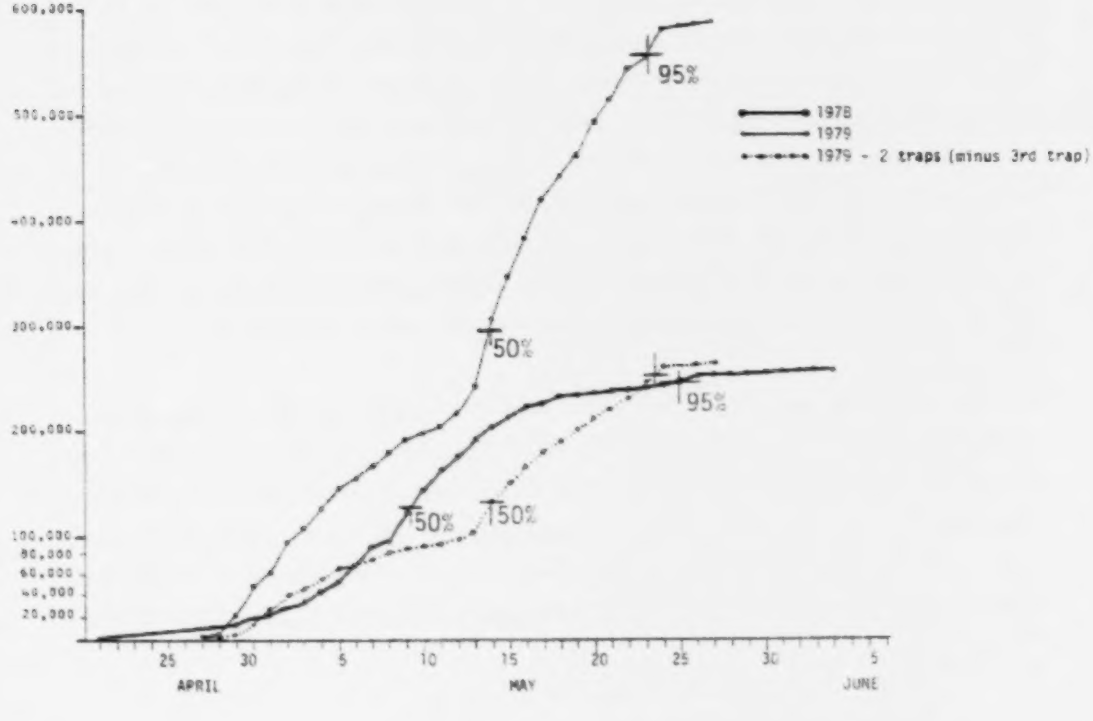


Figure 16. Cumulative nightly catch of chinook fry by inclined plane traps at Henry's Crossing, Chilko River, 1978 and 1979.



In 1978, migration of underyearling chinook was 50% complete by May 9, and 95% complete by May 25. In 1979, a similar timing was recorded as the 50% and 95% levels were reached on May 14 and May 23, respectively (Fig. 16).

In 1959 and 1960, migration index trapping immediately downstream of the Taseko River confluence indicated a similar migration timing to the 1978 and 1979 studies (Appendix XVI). A single 0.6 x 0.9 m IPT captured 86,567 underyearling and 745 yearling chinook in 1959, and 47,180 underyearling and 833 yearling chinook during 1960. Downstream migration of yearling chinook occurred from late April to early June, with the majority migrating in May.

Transport and rearing

Chilcotin River (1977)

In 1977, an estimated 78,300 chinook fry were transported to the Hanceville bridge rearing site. Mortality due to handling, temporary holding and transport was 4,800 fry (6.0%).

From April 29 to August 23, an estimated 73,400 chinook fry were reared. Approximately 2,600 fry (3.5%) were lost to death or disease. Rearing mortality was caused primarily by tail degeneration (peduncle disease), a myxobacterial infection of the lower jaw (DFO Diagnostic Service; Appendix XVII), or an unidentified fungus.

During May, rearing fry were 36 to 40 mm in length and 0.6 to 0.8 g in weight. By late July and early August, fry were 55 to 62 mm and 1.9 to 2.9 g (Table 3; Figure 17). The growth of pen-reared fry from June 6 to July 1 was approximately 9.3 mm, compared to 6.8 mm for wild fry.

Condition factors and specific growth rates shown in Table 3 were comparable to other systems in the Fraser River and Oregon (Burck, 1971; Lister *et al.*, 1981; Murray *et al.*, 1981a; Olmsted *et al.*, 1980a; Whelen *et al.*, 1981). However the growth information is difficult to interpret, because the data for all rearing pens

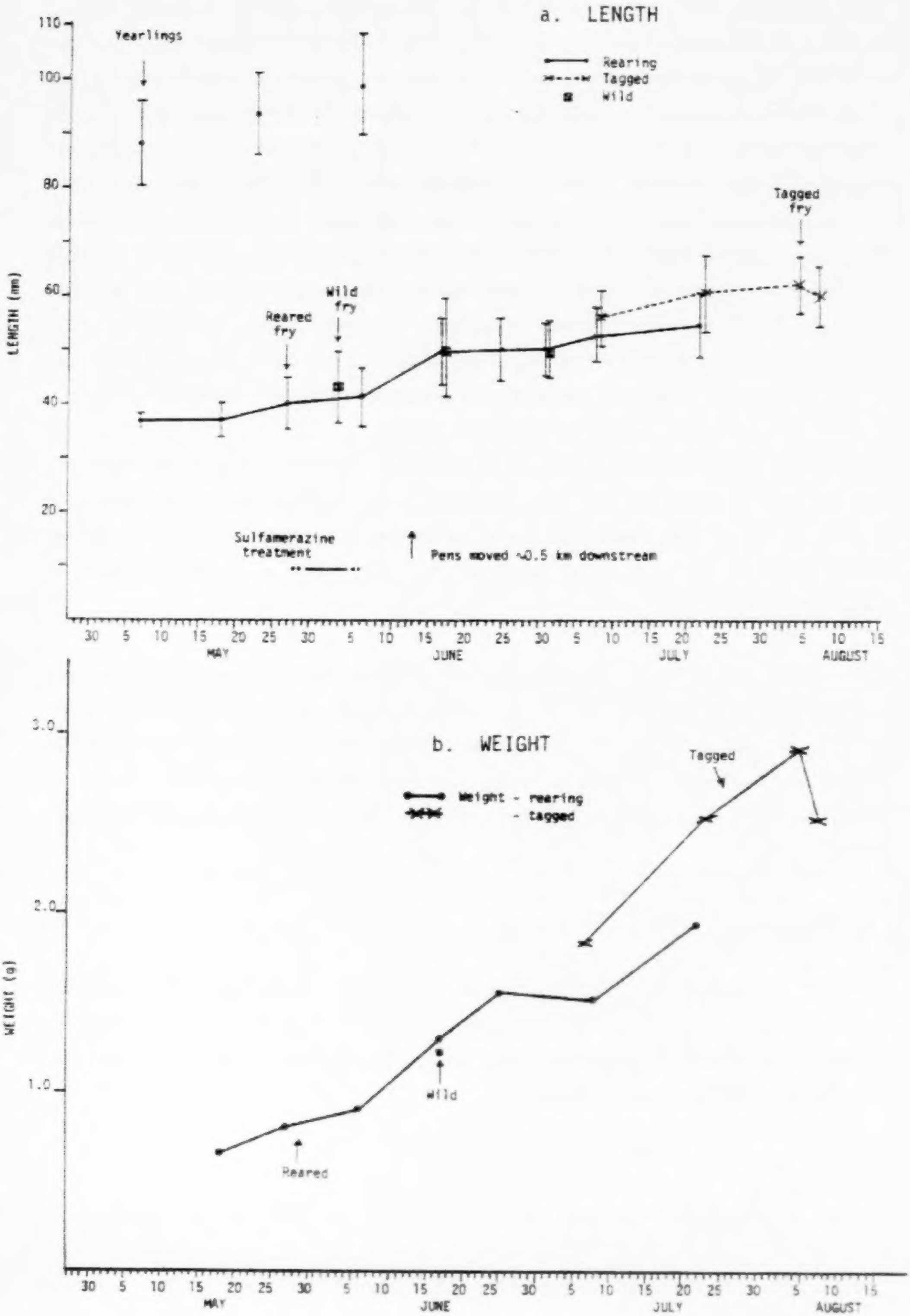
TABLE 3

LENGTHS, WEIGHTS, CONDITION FACTORS (K) AND SPECIFIC GROWTH RATES (SGR) OF CHINOOK SALMON FRY AND YEARLINGS SAMPLED IN THE CHILCOTIN RIVER, 1977

			NOSE-FORK LENGTH			WEIGHT				
SOURCE	AGE	SAMPLING DATE	n	$\bar{x}$ (mm)	SE	n	Average/Fish (g)	Fish/Pound	K	SGR
Rearing pens	0+	07/05	17	36.4	0.39	-	-	-	-	0.15
		18/05	40	37.0	0.47	100	0.65	701	1.28	0.87
		27/05	200	40.0	0.34	200	0.80	566	0.88	0.25
		06/06	100	41.0	0.45	250	0.90	502	1.3	1.71
		17/06	120	49.5	0.53	300	1.31	347	1.08	0.18
		25/06	140	50.2	0.54	350	1.55	292	1.23	0.03
		01/07	99	50.3	0.41	-	-			
		08/07*	125	52.4	0.51	250	1.52	299	1.05	0.29
		22/07**	80	54.6	0.72	200	1.94	234	1.19	
Tagged fish	0+	05-07/07	50	56.0	0.78	100	1.82	249	1.04	0.48
		22-23/07	20	60.5	1.52	50	2.53	179	1.14	0.24
		04-05/08	50	62.4	1.20	50	2.91	156	1.20	-1.88
		06-08/08	50	60.1	0.92	50	2.55	178	1.17	
Wild (mainstem)	0+	03/06	50	43.0	0.86	-				
		17/06	20	49.6	2.12	50	1.46	311	1.19	1.01
		01/07	47	49.8	0.86	-				0.03
Rearing pens	1+	07-09/05	32	88.3	1.38	-	-	-		
		23/05	30	93.2	1.52	-	8.89	51	1.10	
		06/06	35	98.4	1.74	-	-	-		

*Includes fry tagged 05-07/07
**Includes fry tagged 22-23/07

Figure 17. Growth in (a) length and (b) weight for Chilcotin River (1977) chinook fry and yearlings.



were grouped and did not differentiate fry and pens by trapping method, trapping location or duration of pen rearing. The high SGR (1.71) during early to mid-June may have resulted from a number of factors: increased water temperature (Fig. 8) that improved growth, significant increase in water discharge (Fig. 9) which enabled capture of large wild fry, more intense fishing effort, or, improved health following antibiotic treatment (Fig. 17). The rearing pens were moved because of high water in early June, and either the new rearing area or the move reduced growth in mid to late June. A comparable depression of SGR was reported by Olmsted et al. (1980a) when underyearling chinook pen-reared in the Horsefly River were transferred to lower Quesnel Lake. Lengths, weights, growth rates and condition factors in individual pens are summarized in Appendix XVIII. In general, these data parallel overall growth depicted in Figure 17.

Mortalities accounted for a loss of 10,604 fry. Approximately 7,000 fry were lost on July 26 when one pen was overturned and another was vandalized. An additional 708 fry were undersized and were released. Approximately 12,153 fry either escaped through holes worn in the net pens or were a result of enumerative errors.

From April 28 to June 18, 868 yearling chinook were pen-reared. Rearing related mortality was 19 fish (2.2%). From July 27 to August 9, 425 rainbow trout were held with low mortality. The rainbow trout were slower to respond to OMP compared with juvenile chinook. Juvenile rainbow varied from 0+ to 4+ years, and ranged in mean length from 50.0 to 177.8 mm, respectively (Appendix XIX).

Chilko River (1978-1979)

In 1978, an estimated 234,300 chinook fry were transported with negligible mortality and reared from April 22 to June 4. A total of 11,900 rearing fry (6.0%) were lost to death or disease. Mortality occurred primarily in smaller, weaker fish which were not feeding.

In 1979, approximately 228,700 chinook fry were transported from Henry's Crossing to the rearing site at the Chilko Lake outlet. Mortality during transport was low (0.1%). From April 28 to May 14, 98.0% of the fry were transported, with the remainder on May 24. Deaths and disease during rearing resulted in a loss of 4,900 fry (2.1%).

The mean size of underyearling chinook trapped on May 4, 1978 was 36.3 mm and 0.48 g (Table 4). Chinook fry captured on April 29, 1979 were 36.2 mm and 0.45 g (Table 5). Minor differences in length were evident between 1978 and 1979. However, weight was greater in 1979 than in 1978 (Fig. 18); these differences are reflected by generally higher SGR and K for pen-reared underyearling chinook in 1979 (Tables 4, 5). Variation in growth may have resulted from the progressive increase in water temperature in 1979 compared to fluctuating temperatures typical of 1978. Since growth rates, as determined by weight, diverge in mid-May (Fig. 18), decreased growth in 1978 may have been related to emergency transport and disease outbreak. Whelen et al. (1981) noted marked decreases in both K and SGR among Quesnel River pen-reared chinook during disease outbreaks. In general, the growth of Chilko River fry was comparable to rates measured for Chilcotin River stocks in 1977.

Tagging

Chilcotin River (1977)

In 1977, an estimated 49,565 underyearling chinook, 793 yearling chinook and 424 juvenile rainbow trout were released with adipose fin clips and CWTs (Table 6; Appendix XX). These numbers are corrected values which consider tagging related mortality, and tag loss.

Chilko River (1978-1979).

In 1978 and 1979, an estimated 149,159 and 195,455 underyearling chinook, respectively, were released with adipose fin clips and CWTs (Table 6; Appendix XXI-XXII). In 1978, 607 fry died as a direct result of tagging; preliberation tag loss was estimated at 0.8%. In 1979, 811 fry died as a result of tagging, and preliberation tag loss was 2.4%.

TABLE 4

LENGTHS, WEIGHTS, CONDITION FACTORS (K) AND SPECIFIC GROWTH RATES (SGR) OF CHINOOK SALMON FRY AND YEARLINGS SAMPLED IN THE CHILKO RIVER, 1978

			NOSE - FORK LENGTH			WEIGHT				
SOURCE	AGE	SAMPLING DATE	n	$\bar{x}$ (mm)	SE	n	Average/fish (g)	Fish/pound	K	SGR
Rearing pens	0+	03-04/05	80	36.3	0.16	200	0.48	949	1.00	0.50
		10/05	100	37.5	0.12	500	0.44	1,038	0.83	0.09
		28/05	200	38.1	0.13	1,000	0.52	869	0.94	-0.04
		04-05/06	220	38.0	0.17	1,050	0.55	819	1.01	0.48
		11/06	220	39.2	0.20	1,050	0.65	693	1.09	1.19
		18/06	220	42.6	0.26	1,050	0.85	534	1.10	0.81
		25/06	220	45.1	0.25	1,050	0.97	466	1.06	0.80
		02/07	200	47.7	0.29	1,000	1.11	410	1.02	0.21
		09/07	420	48.4	0.22	600	1.30	349	1.15	
Tagged fish	0+	14/07	50	51.4	0.51	50	1.36	334	1.00	-0.06
		17/07	50	51.3	0.57	50	1.39	327	1.03	2.88
		18/07	50	52.8	0.52	50	1.67	276	1.12	2.80
		19/07	50	54.3	0.49	50	1.80	253	1.12	-0.18
		20/07	50	54.2	0.62	50	1.98	229	1.24	-1.67
		21/07	50	53.3	0.48	50	1.87	243	1.23	-1.52
		22-23/07	50	52.1	0.49	50	1.67	272	1.18	
Wild - Henry's Crossing (side channel)	0+	29/06	20	45.1	0.60	49	1.02	444	1.11	

TABLE 5

LENGTHS, WEIGHTS, CONDITION FACTORS (K) AND SPECIFIC GROWTH RATES (SGR) OF CHINOOK SALMON FRY AND YEARLINGS SAMPLED IN THE CHILKO RIVER, 1979

			NOSE-FORK LENGTH			WEIGHT				
SOURCE	AGE	SAMPLING DATE	n	$\overline{x}$ (mm)	SE	n	Average/fish (g)	Fish/pound	K	SGR
Rearing pens	0+	29/04	25	36.2	0.24	50	0.45	1,003	0.95	0.35
		08/05	120	37.5	0.11	300	0.45	1,019	0.84	-0.31
		15/05	200	36.7	0.10	500	0.54	846	1.08	0.49
		22/05	180	38.0	0.12	450	0.59	773	1.07	0.77
		29/05	200	40.1	0.16	500	0.68	672	1.05	0.42
		06/05	200	41.3	0.19	500	0.80	570	1.13	0.90
		13/06	200	44.0	0.21	500	0.97	467	1.14	0.67
		20/06	180	46.1	0.24	450	1.10	412	1.12	0.81
		25/06	180	48.0	0.22	450	1.17	389	1.05	0.39
		04/07	180	49.7	0.27	450	1.44	316	1.17	
Rearing Raceways	0+	20/06	20	45.3	0.83	50	1.23	369	1.32	2.09
		25/06	20	50.3	0.60	50	1.37	330	1.08	0.56
		04/07	20	53.0	0.96	50	1.92	236	1.29	
Tagged fish	0+	05/07	50	52.9	0.35	50	1.60	284	1.09	3.72
		06/07	50	54.7	0.51	50	1.79	253	1.09	5.85
		07/07	50	58.0	0.45	50	2.17	209	1.11	1.37
		08/07	50	58.8	0.37	50	2.29	198	1.13	-5.96
		09/07	50	55.4	0.41	50	1.82	249	1.07	-0.54
		10/07	50	55.1	0.41	50	1.81	250	1.08	-1.09
		11/07	50	54.5	0.57	50	1.97	230	1.22	0.55
		12/07	50	54.8	0.45	50	1.83	248	1.11	-3.33
		13/07	50	53.0	0.41	50	1.79	253	1.21	1.31
		14/07	50	53.7	0.42	50	1.90	239	1.23	3.12
		15/07	50	55.4	0.41	50	1.95	232	1.15	-2.56
		16/07	50	54.0	0.48	50	1.79	254	1.13	
Wild - Incline plane trap at Henry's Crossing	1+					RANGE				
		08/05	2	72.0	2.97	69.0 - 75.0				
			2*	93.5	1.48	92.0 - 95.0				
		10-14/05	9	72.5	2.53	57.0 - 82.0				
		19-20/05	3	83.0	6.81	70.0 - 93.0				
		21/05	1*	98.0						

*smolts with missing adipose fin

Figure 18. Growth in (a) length and (b) weight for Chilko River (1978 and 1979) chinook fry and yearlings.

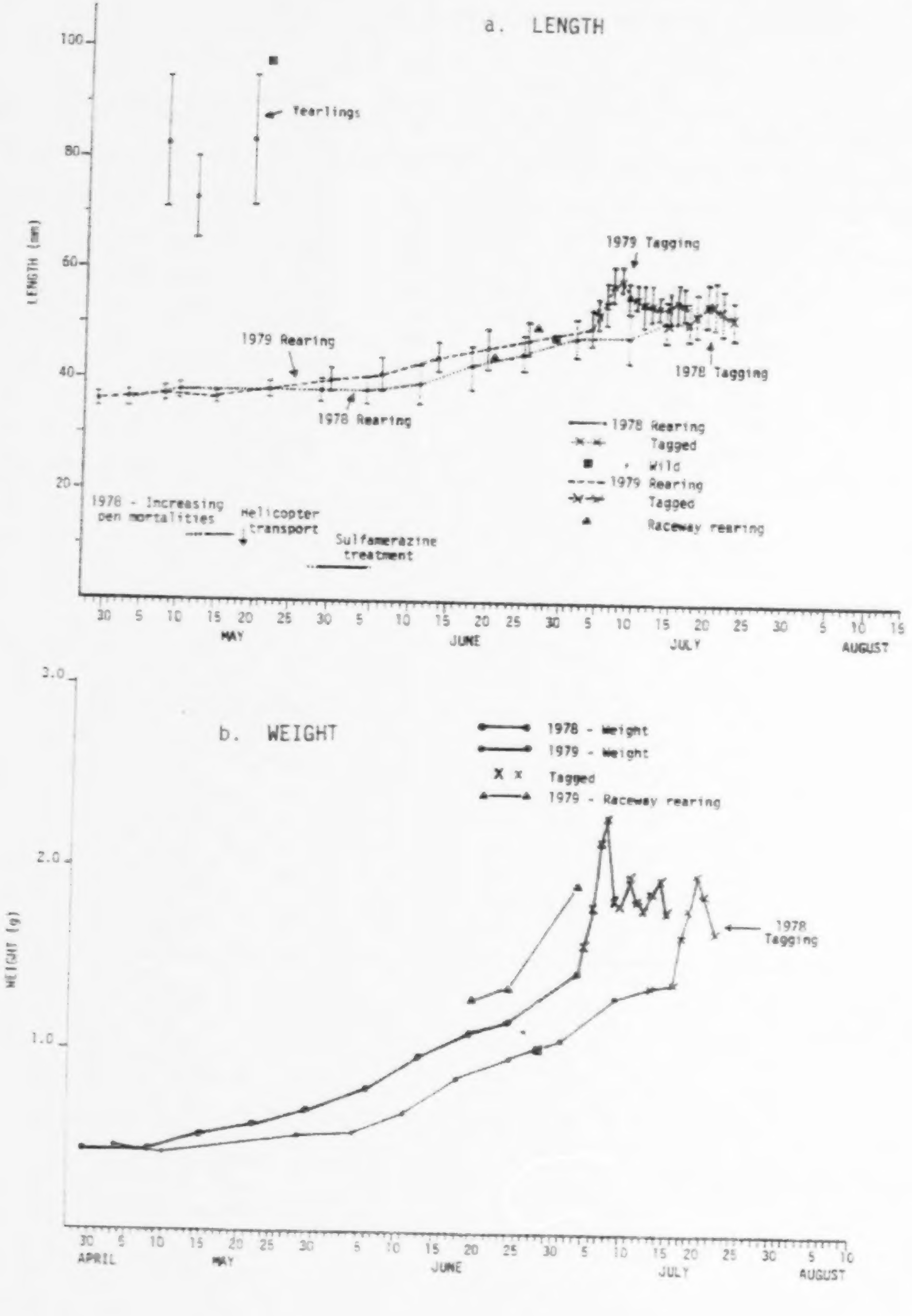


TABLE 6

SUMMARY OF CODED WIRE TAGGING ON THE CHILCOTIN/CHILKO RIVERS, 1977-1979

River	Year	Species	Tagging & Release Period	Tag Code	Total Number Tagged	Total Number Released[1]	Estimated Number of Tagged Fish Released[2]	Length (mm)		Weight (g)		K
								$\bar{x}$	S.D.	$\bar{x}$	S.D.	
Chilcotin	1977	Chinook fry (0+)	July 1-August 12	02/21/17	50,739	50,222	49,565	57.7	3.90	2.21	0.53	1.15
		Chinook smolts (1+)	July 1-August 12	02/21/16	818	807	793	93.3	5.05			
		Rainbow trout	July 1-August 12	12/1/8	425	424	424	93.4				
Chilko	1978	Chinook fry (0+)	July 7-July 23	02/21/19	74,397	74,054	73,246					
				02/21/25	76,680	76,416	75,913					
	Σ				151,077	150,470	149,159	52.8	1.24	1.67	0.23	1.13
Chilko	1979	Chinook fry (1+)	July 5-July 16	02/16/58	152,480	152,015	149,523					
				02/16/2	48,594	48,248	45,932					
	Σ				201,074	200,263	195,455	55.0	1.79	1.89	0.19	1.14

[1] Corrected for post-tag mortality, however tag loss not deducted

[2] Estimated number of fish released without nose tags due to preliberation tag loss

Chinook fry tagged in July, 1978 were 51 to 54 mm and 1.4 to 2.0 g, whereas in early to mid-July, 1979, the fry were 53 to 59 mm and 1.6 to 2.3 g. At the start of the tagging operation in 1979, juveniles reared in the raceways averaged 3 mm longer and 26.0% heavier than pen-reared fry.

Migratory movements of juvenile chinook salmon

Chilko River

Downstream trapping during 1978 and 1979 programs indicated that large numbers of chinook fry migrate downstream beginning by late April, peak in mid-May, and diminish by early June. Extensive rearing, and probably overwintering, occurred in side channels of the islands downstream from Henry's Crossing. Light rearing and some overwintering occurred in the mainstem river and islands upstream from Henry's Crossing.

Downstream trapping in 1959 and 1960 immediately upstream from the mouth of the Taseko River indicated a similar timing of migration to that observed in 1978 and 1979 (Appendix XVI). These data indicate that a large percentage of Chilko River chinook fry migrate to downstream rearing areas.

Migration of 1+ chinook occurred from late April to early June, with the majority of migration in May. The 1977 Chilcotin River catch of yearling chinook at Hanceville was similar in magnitude and timing to that observed in 1959 and 1960 on the Chilko River. The timing and magnitude of these catches, compared to low yearling catches in 1978 and 1979 on the Chilko River at Henry's Crossing, indicated that little overwintering occurs upstream of Henry's Crossing.

Chilcotin River

Downstream trapping in 1977 indicated that fry migration began in early April, peaked in mid-May, and was completed by late June. Seine and minnow trap effort suggested extensive rearing in the Bull Canyon, Alexis Creek and Hanceville regions. From August to late September, the number of juveniles declined markedly.

The extent of overwintering in the Chilcotin River is presently unknown. Although yearling chinook were captured at the Hanceville bridge in 1977, these fish may have overwintered in the Chilko, Taseko, Upper Chilcotin rivers or Elkin Creek. From mid-July to mid-August, the recapture of tagged fry (Appendix XXIII) near the Hanceville rearing/release site, and a side channel a short distance downstream of the release site, indicated that either downstream migration was slower by mid-summer or the recaptures were fry that would overwinter in the system.

SPAWNING CHINOOK STUDIES

Escapements, spawner distribution and timing

Chilko River

Escapement: The DFO has maintained records of chinook escapement to the Chilko River since 1925. Prior to the late 1950s, recorded escapements were generally 300 to 500 chinook (DFO, unpubl. data; Manzon and Marshall, 1980). From 1958, escapement has been estimated to range from 400 to 11,000 chinook (Table 7).

In 1980, the DFO regional fisheries officer estimated the spawning escapement at 7,000 chinook (Table 7); this estimate was derived from census data acquired by fixed wing aircraft overflights of the system. On September 9, 1980, E.V.S. Consultants Ltd. enumerated 3,269 chinook by helicopter surveillance from Chilko Lake outlet to a point approximately 10 km downstream of the islands (Table 8). The remaining watercourse to the Chilcotin River confluence was also flown, but no fish were observed migrating to the upper Chilko River. A second overflight on September 20 estimated 1,769 spawners in Chilko River from Sections 1-6 (Table 8). Redds and carcasses were not enumerated on this occasion. Therefore, taking the maximum observed escapement and assuming a 30 to 40% underestimate due to aerial counting, the estimated range would be 4,250 to 4,577, with a mean escapment of 4,414.

TABLE 7

CHINOOK SALMON ESCAPEMENTS TO THE CHILCOTIN RIVER SYSTEM, (1958-1980)

(From: Manzon and Marshall, 1980)

Year	Chilko River	Upper Chilcotin River	Elkin Creek	Taseko River*[1]	Total
1958	750	750		750	2,250
1959	3,500	750		750	5,000
1960	400	400		400	1,200
1961	400	400		400	1,200
1962	1,500	750		750	3,000
1963	1,500	400		400	2,300
1964	7,500	1,500		750	9,750
1965	3,500	400		30	3,390
1966	3,500	750		400	4,650
1967	4,000	700		600	5,300
1968	4,500	400		400	5,300
1969	7,000	400		400	7,800
1970	7,500	750		750	9,000
1971	4,000	1,500	400	200	6,100
1972	2,000	750	267	N/O	3,017
1973	7,000	750	200	N/O	7,950
1974	1,500	750	100	N/O	2,350
1975	11,000	850	100	350	12,300
1976	6,500	750	350	25	7,625
1977	7,000	700	450	UNK	8,150
1978	7,500	850	350	300	9,000
1979	3,300	1,500	200	50	5,050
1980*[2]	7,000	950	125	100	8,175
1980*[3]	4,414	1,418	287	UNK	6,119

*[1] 1958-70 escapements include Elkin Creek

*[2] DFO Fisheries Officier estimate

*[3] E.V.S. Consultant Ltd. estimate

N/O None observed

UNK Chinook present however difficult to enumerate due to glacial coloration

TABLE 8

HELICOPTER ENUMERATION OF SPAWNING
CHINOOK SALMON, CHILKO RIVER, 1980

Chilko River Section	September 8 Σ Spawners	Σ Carcasses	Σ Redds	September 20 Σ Spawners
1	298	0	200	113
2	833	0	75	231
3	866	0	220	718
4	9	0	0	30
5	1,255	1	*	676
6	7	0	*	1
	Σ 3,268	1	495	1.769

*Not determined

Distribution: From 1975 to 1980, heavy spawning occurred in the Lingfield Creek area, generally from the creek mouth to approximately 1.5 km upstream (Section 3; Fig. 4). Moderate spawning densities occurred at the extremities of Canoe Crossing (Section 1), the islands downstream of Henry's Crossing (Section 5) and in Section 2. Light and scattered spawning occurred below the islands downstream of Henry's Crossing (Section 6) and in Section 2. Historic spawning observations generally indicate a similar spatial distribution.

Timing: From 1975 - 1980, chinook salmon arrived in the upper Chilko River by mid-August (Table 9). Spawning began in late August to early September, peaked from mid to late September and ended by early October.

From 1969 to 1974, Chilko River chinook generally arrived in early August, although extremes ranging from late June to early September have been recorded. Spawning generally began in early to late September, later than recorded for recent times. Peak spawning and completion of reproduction were similar to 1975 - 1980 data. Prior to 1969, records indicate that spawning occurred up to one month in advance of recent observations.

TABLE 9

TIME OF CHINOOK SALMON ARRIVAL AND DURATION OF SPAWNING ON THE CHILCOTIN RIVER SYSTEM FROM 1975 TO 1980

Stream	Arrival in Stream	Spawning		
		Start	Peak	End
Chilko River	mid August	late August to early September	mid to late September	late September to early October
Upper Chilcotin River	late June and July	mid to late August	late August to early September	mid September
Elkin Creek	August	mid August to early September	early September	mid to late September
Taseko River	mid July to early August	mid August	late August to early September	early September

Upper Chilcotin River

Escapement: Spawning ground records date from 1925. Prior to 1950, escapements remained constant at approximately 300 to 500 chinook (DFO, unpubl. data). From 1950 to the present (Table 7), the escapement has generally ranged from 400 to 850 fish, although 1,500 spawners were recorded in some years (Manzon and Marshall, 1980).

In 1980, the DFO regional fisheries officer estimated the chinook escapement at 950 spawners (Table 7). E.V.S. Consultants Ltd. enumerated 929 spawners and 113 carcasses on September 8, 1980 (Table 10). Collectively, these latter data indicate a minimum escapement of approximately 1,050 chinook. Considering the number of log jams and deep corner pools which typically concentrate carcasses and prevent total aerial census, the E.V.S. Consultants Ltd. estimate was conservative and probably underestimated the 1980 escapement by at least 30 to 40%. Therefore, a more appropriate escapement estimate would range from 1365 to 1470, with a mean of 1418 spawners.

On September 20, 1980, a total of 56 carcasses were enumerated in the Upper Chilcotin River. No spawners were evident at that time.

TABLE 10

HELICOPTER ENUMERATION OF SPAWNING CHINOOK
SALMON, UPPER CHILCOTIN RIVER, 1980

Upper Chilcotin River Section	September 8 Σ Spawners	Σ Carcasses	Σ Redds	September 20 Σ Spawners	Σ Carcasses	Σ Redds
1	16	1	9	0	3	0
2	160	5	75	0	5	24
3	128	11	53	0	17	58
4	9	5	6	0	3	10
5	128	6	15	0	10	96
6	161	26	156	0	9	120
7	318	53	325	0	9	141
8	9	6	7	0	0	10
Σ	929	113	646	0	56	459

Distribution: From 1975 to 1980, spawning activity was generally distributed from the outlet of Chilcotin Lake to the Chilko River confluence (Fig. 5). During 1980, heaviest spawning activity (spawners and redds) was noted in Section 7 between Redstone and the River Road bridge (Table 10). Moderate spawning occurred in upstream areas, including Sections 2, 3, 5 and 6, while light to scattered spawning was observed in Sections 1, 4 and 9 (Fig. 5). Scattered and light spawning activity has been recorded upstream of Chilcotin Lake and downstream of the Chilko River confluence in some years (DFO, unpubl. data), although utilization of these areas appear generally unpredictable.

Timing: Timing of chinook arrival and spawning in the Upper Chilcotin River from 1975 to 1980 are summarized in Table 9. Chinook first appeared in the watercourse during late June and July. Spawning activity began in mid to late August, peaked in late August to early September and terminated by mid-September. Spawning generally preceded the Chilko River by two weeks. Prior to 1970, records indicate that spawning generally occurred two to six weeks earlier than observed from 1975 to 1980.

Elkin Creek

Escapement: Prior to 1971, escapement estimates for Elkin Creek were generally combined with those of the Taseko River. Collectively, these records indicated that escapement to the Taseko River drainage has ranged from 30 to 750 spawners, with an average escapement of approximately 400 (Table 7). From 1971 to 1974, and 1975 to present, escapements have ranged from 100 to 300, and 100 to 450, respectively, in Elkin Creek.

In 1980, the DFO regional fisheries officer estimated the Elkin Creek escapement at 125 chinook. On September 8, 1980, E.V.S. Consultants Ltd. counted 194 spawners and 8 carcasses during a helicopter overflight of Elkin Creek (Table 11). This total correlated with diver/boat census (212) conducted several days previous. By September 20, only 3 live and 14 dead remained (Table 11). Therefore, assuming a 30 to 40% underestimate of escapement, the estimated range would be 276 to 297, with a mean escapement of 287.

TABLE 11

HELICOPTER ENUMERATION OF SPAWNING CHINOOK SALMON, ELKIN CREEK, 1980

	September 8			September 20		
Elkin Creek Section	Σ Spawners	Σ Carcasses	Σ Redds	Σ Spawners	Σ Carcasses	Σ Redds
1	1	0	0	0	0	0
2	36	0	*	0	0	20
3	77	0	32	0	4	35
4	73	6	33	3	14	40
5	7	0	1	0	0	0
	Σ 194	8	66	3	14	100

*Not determined

Distribution: From 1975 to 1980, chinook salmon spawned mainly between the outlet of Elkin Lake and the 12 km reach downstream to the Taseko River confluence (Fig. 6). The presence of beaver dams affects spawner distribution in some years. For example, spawning was concentrated upstream of Vedan Lake, between Vedan and Elkin lakes and downstream of Elkin Lake during 1978;

however, in 1979 and 1980, a large beaver dam at the outlet of Elkin Lake appeared to hinder ascent, as only one chinook was observed above this point. In 1980, spawning was heavy in Sections 3 and 4, moderate in Section 2, light in Section 5 and scattered (or nil) in Section 1 (Table 11; Fig. 6). Historic records support the distribution documented from 1975 to 1980.

Timing: From 1975 to 1980, chinook arrived in Elkin Creek in August. Spawning began in mid-August to early September, peaked in early September and usually ended by mid to late September (Table 9). Records prior to 1975 indicate a similar timing, with the exception of spawner arrival which occurred in mid-July, 1971.

Taseko River

Escapement: Spawning records exist from 1945 to the present, and indicate that escapements were generally less than 500 chinook. From 1975 to 1980, estimated escapement ranged from 100 to 450 (Table 7). Accurate enumeration of spawners in Taseko River is complicated by poor visibility resulting from glacial silts.

E.V.S. Consultants Ltd. enumerated only 8 spawners and 3 carcasses from the outlet of Taseko Lake to Elkin Creek junction on September 8, 1980. However, visibility at this time was extemely limited following a period of warm weather, rainfall and accelerated glacial runoff. The DFO estimated 100 spawners during 1980.

Distribution: Spawning has only been observed at Taseko Lake outlet and downstream for 3 km (Section 1; Fig. 6).

Timing: From 1975 to 1980, chinook arrival was reported from mid-July to early August. Spawning commenced in mid-August, peaked in late August to early September, and ended in early September. Historic records generally indicate a similar timing, except occasionally, when spawning activity has been recorded two to four weeks earlier.

Chilanko and Lord rivers, Falls, Bidwell and Brittany creeks

Sections of these streams were briefly surveyed during general reconnaissance of the Chilcotin River system between 1976 and 1979 (Appendix XXIV).

In late August, 1976, five chinook spawners were observed in the Chilanko River, near the confluence with the Upper Chilcotin River. Pre-1975 spawning ground reports occasionally document scattered spawning approximately 8 and 23 km upstream from the confluence with the Chilcotin River. No evidence of spawning has been reported in the Lord River or Falls, Bidwell or Brittany creeks.

Sex, age and length composition

A total of 3,422 chinook carcasses were examined on the Chilcotin River drainage from 1975 to 1980 (Appendix XXV). Of these, 2,432 carcasses were sexed, 1,370 were aged and 2,438 were measured for length (Table 12). Of the 2440 carcasses sampled, 0.3% and 0.08% could not be sexed or measured, respectively, due to decomposition; 11.9% of scale samples were regenerate, and 1.5% were resorbed.

TABLE 12

NUMBER OF CHINOOK SALMON CARCASSES SAMPLED FOR SEX, AGE AND LENGTH ON THE CHILCOTIN RIVER SYSTEM FROM 1975 TO 1980*

	NUMBER CARCASSES SAMPLED							NUMBER CARCASSES SEXED							NUMBER CARCASSES AGED							NUMBER CARCASSES MEASURED						
	1975	1976	1977	1978	1979	1980	Σ	1975	1976	1977	1978	1979	1980	Σ	1975	1976	1977	1978	1979	1980	Σ	1975	1976	1977	1978	1979	1980	Σ
CHILKO RIVER	99	77	171	80	135	1292	1854	99	77	170	79	134	1291	1850	95	74	153	64	122	432	940	99	77	171	80	134	1291	1852
UPPER CHILCOTIN RIVER		25	19	6	86	242	378		24	19	6	85	242	376		20	12	6	82	132	252		25	19	6	86	242	378
CHILCOTIN RIVER			1				1			0				0			1				1			1				1
ELKIN CREEK			29	10	17	67	123			29	10	17	67	123			26	10	14	50	100			29	10	17	67	123
TASEKO RIVER	17		20	10	13	24	84	17		20	10	12	24	83	14		17	10	13	23	77	17		20	10	13	24	84
Σ	116	102	240	106	251	1625		116	101	238	105	248	1624		209	94	209	90	231	637		116	102	240	106	250	1624	

*Number of carcasses sampled in 1980 does not include the 982 carcasses checked for adipose clip only

The sex composition of carcasses examined from 1975 to 1980 indicated a predominance of females (Table 13), consistent with chinook recoveries on other upper Fraser River drainages (i.e. Hickey and Lister, 1981; Murray et al., 1981b; Olmsted et al., 1980b; 1981). However, sex ratios acquired by carcass recovery may not reflect the true proportion of male, female and jack chinook spawners in larger watercourses. Generally, spent females remain on redds following spawning, and mortality often occurs in shallow water along the river margin. Male chinook tend to be more errant during spawning, and carcasses are often found in deep, inaccessible areas (P. Starr, pers. comm.). Further, sampling frequency, timing and the extent of surveys may also bias the observed ratios.

TABLE 13

SEX RATIO AND PERCENT COMPOSITION OF CHINOOK SALMON SAMPLED IN THE CHILCOTIN RIVER SYSTEM, 1975-1980

		NUMBER/PERCENT OF CHINOOK SEXED																		TOTAL		
		1975			1976			1977			1978			1979			1980					
		M	F	Σ	M	F	Σ	M	F	Σ	M	F	Σ	M	F	Σ	M	F	Σ	M	F	Σ
CHILKO	n	15	84	99	1	76	77	43	127	170	15	64	79	32	102	134	414	877	1,291	520	1,330	1,850
RIVER	%	15.2	84.8		1.3	98.7		25.3	74.7		19.0	81.0		23.9	76.1		32.1	67.9		28.1	71.0	
UPPER CHILCOTIN	n				8	16	24	8	11	19	1	5	6	37	48	85	96	146	242	150	226	376
RIVER	%				33.3	66.7		42.1	57.9		16.7	83.3		43.5	56.5		39.7	60.3		39.9	60.1	
ELKIN	n							19	10	29	7	3	10	5	12	17	30	37	67	61	62	123
CREEK	%							65.5	34.5		70.1	30.0		29.4	70.6		44.8	55.2		49.6	50.4	
TASEKO	n	1	16	17				13	7	20	0	10	10	3	9	12	4	20	24	71	62	83
RIVER	%	5.9	94.1					65.0	35.0			100.0		25.0	75.0		16.7	83.3		25.3	74.7	

Chilko River

From 1975 to 1980, 1,854 carcasses were sampled on the Chilko River; an additional 982 carcasses were examined for adipose clips (CWT) only. Collectively, these totals represent 80.0% of all carcasses examined in the Chilcotin River drainage during these years.

Based upon carcass recovery, the sex composition indicated a predominance of females from 1975 to 1980. The six-year mean percent composition was 71.9% females and 28.1% males, with minor yearly variations (Table 13).

Prior to 1980, 'ocean-type' (fish migrating to saltwater in their first year of life) age 4_1, and to a lesser degree age 3_1 fish, formed the major component of the carcasses sampled (Fig. 19a; Appendix XXVI). In 1980, 'stream-type' fish (fish overwintering in freshwater as juveniles and migrating to sea in their second year of life) age 4_2 and 5_2, were more evident for both sexes (males - age 4_2:7.0%, age 5_2:73.9%; females - age 4_2:22.4%, age 5_2:49.4%). This increase in the incidence of 5_2 fish was also experienced among other upper Fraser River watercourses which support chinook (Hickey and Lister, 1981; Murray et al., 1981b; Olmsted et al., 1981). These 5 year old chinook illustrate the strength of the 1975 brood year and possibly the favorable overwintering conditions for juveniles that year.

Results of previous sampling of Chilko River chinook carcasses in 1969 (Armstrong and Hollett, 1970) were similar to the 1975 to 1979 period. Only 18 of 103 carcasses (17%) were male; 4_1 chinook predominated (65%) and age 3_1 and 5_2 comprised 17% and 13% of samples, respectively. Ocean-type chinook represented 84% of samples aged.

The length frequency distribution of chinook salmon carcasses sampled on the Chilko River from 1975 to 1980 are presented in Figure 20a and Appendix XXVII. Over the six-year sampling period, 80% of Chilko River males and females sampled were 52-84 cm and 60-80 cm, respectively.

The mean length by age of the Chilko River carcasses from 1975 to 1980 are presented in Table 14a. Summarizing, the six-year means indicated: (1) ocean-type 4_1 and 5_1 chinook were longer than respective stream-type 4_2 and 5_2 fish; (2) carcasses sampled from the same brood year (i.e. similar ocean residence time: 3_1-4_2, 4_1-5_2, 5_1-6_2) were approximately the same length; and, (3) males were longer than females of similar age, except for age 3_1 and 4_2 fish.

Upper Chilcotin River

From 1975 to 1980, 378 carcasses were sampled on the Upper Chilcotin River, which represents 15.5% of all carcasses examined in the Chilcotin River drainage (Table 12).

Figure 19. Age composition of chinook carcasses sampled from the Chilcotin River system, 1975-1980.

a) Chilko River

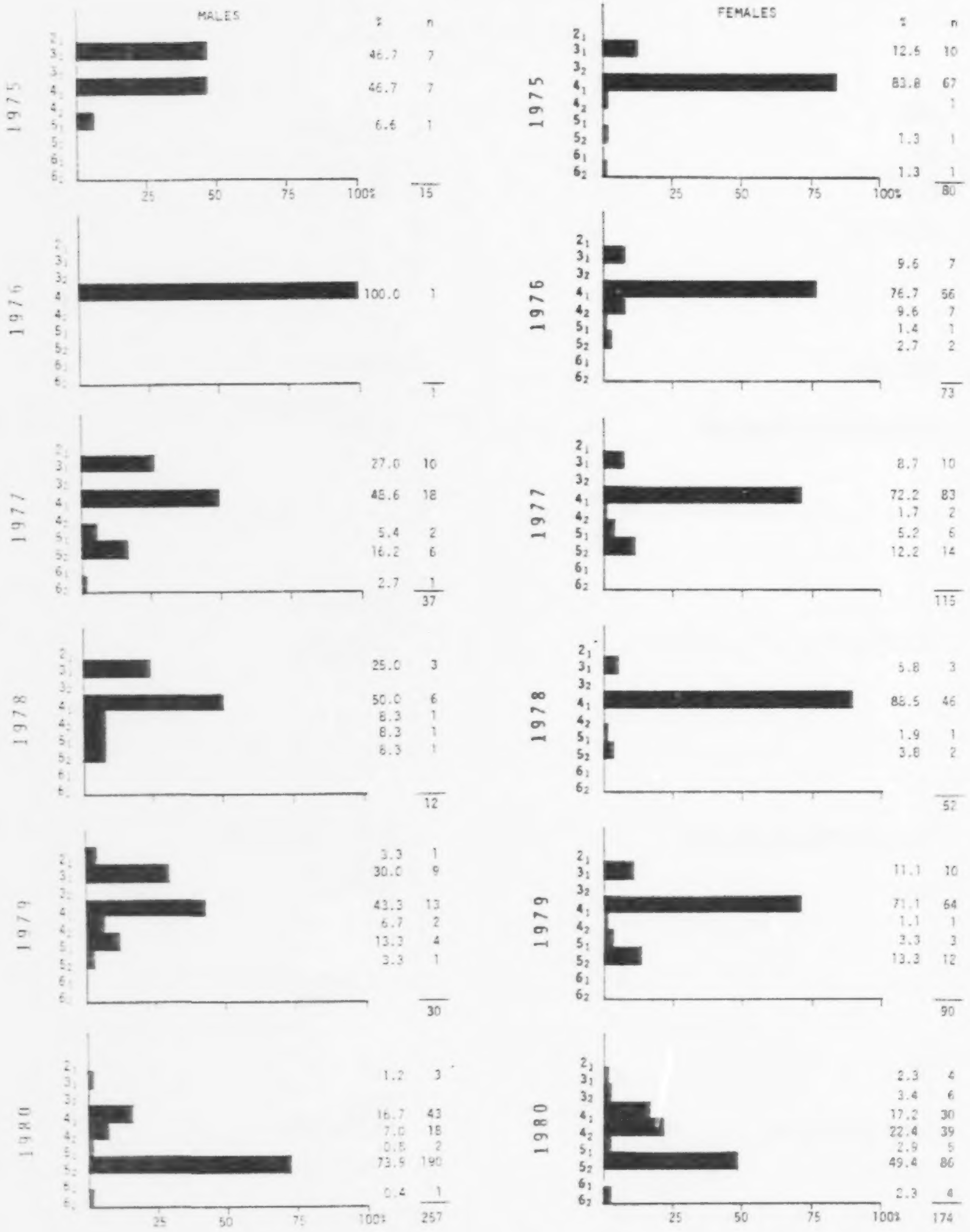


Figure 19 (cont.)

b) Upper Chilcotin River

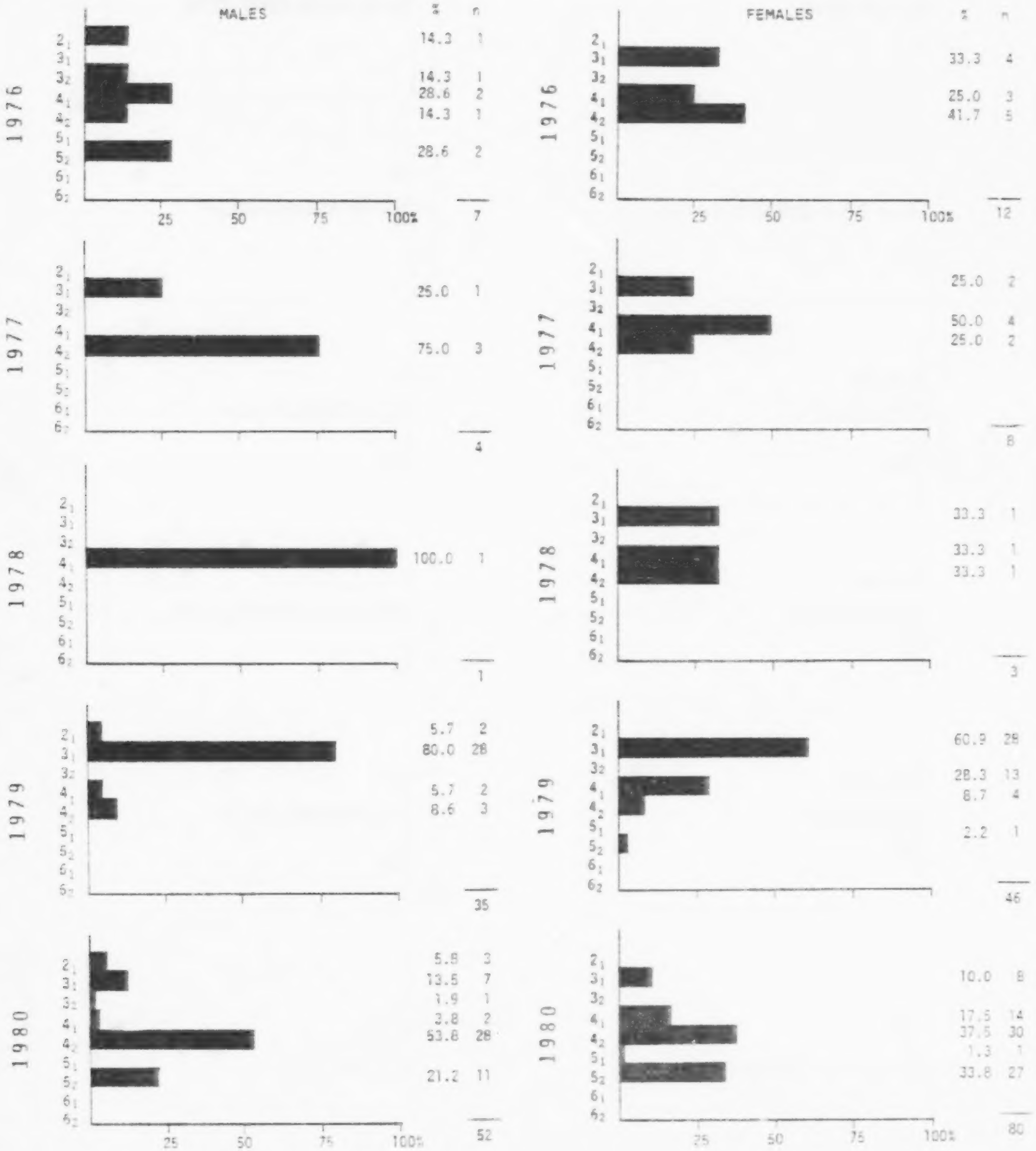


Figure 19 (cont.)

c) Elkin Creek

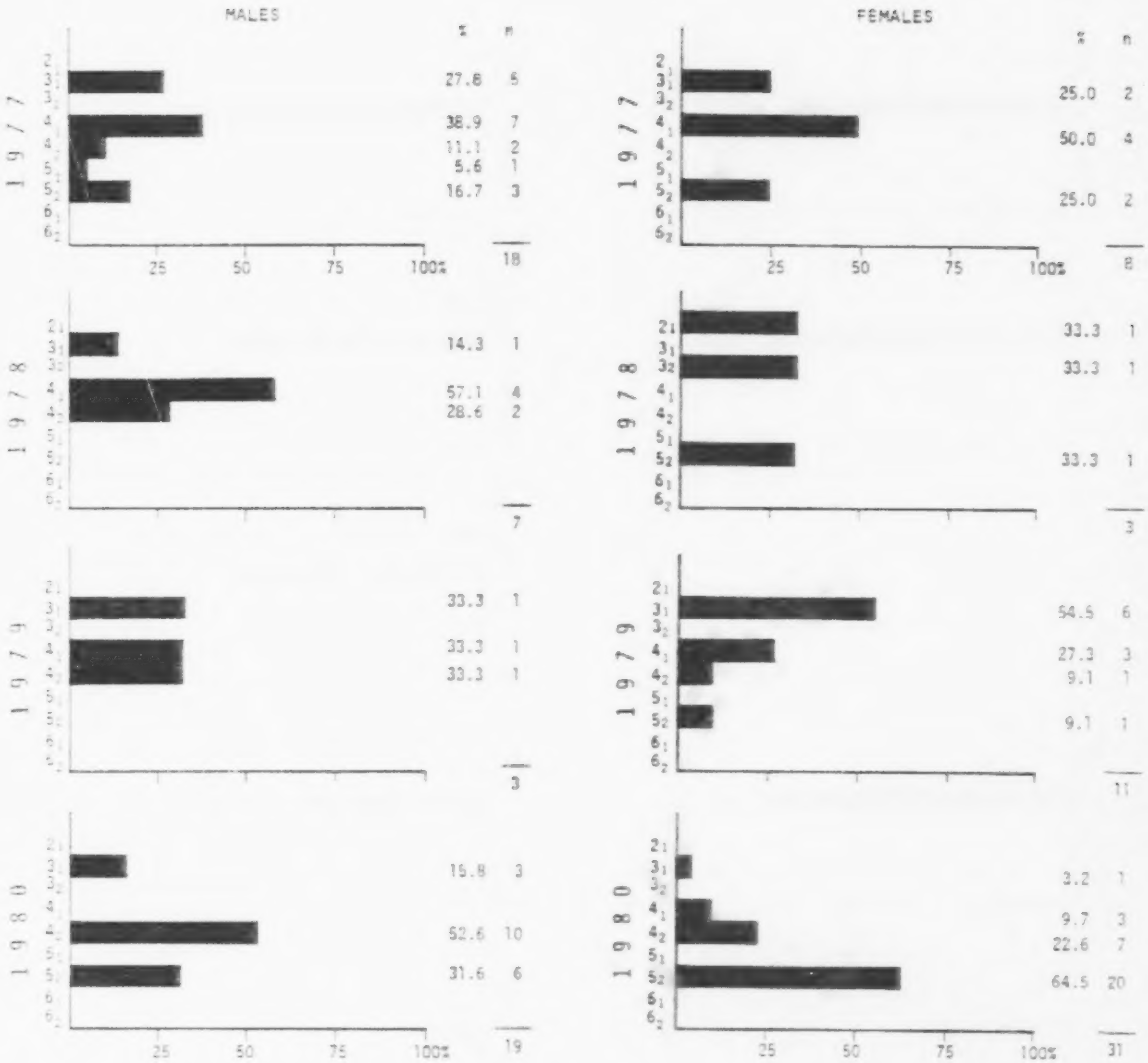


Figure 19 (cont.)

d) Taseko River

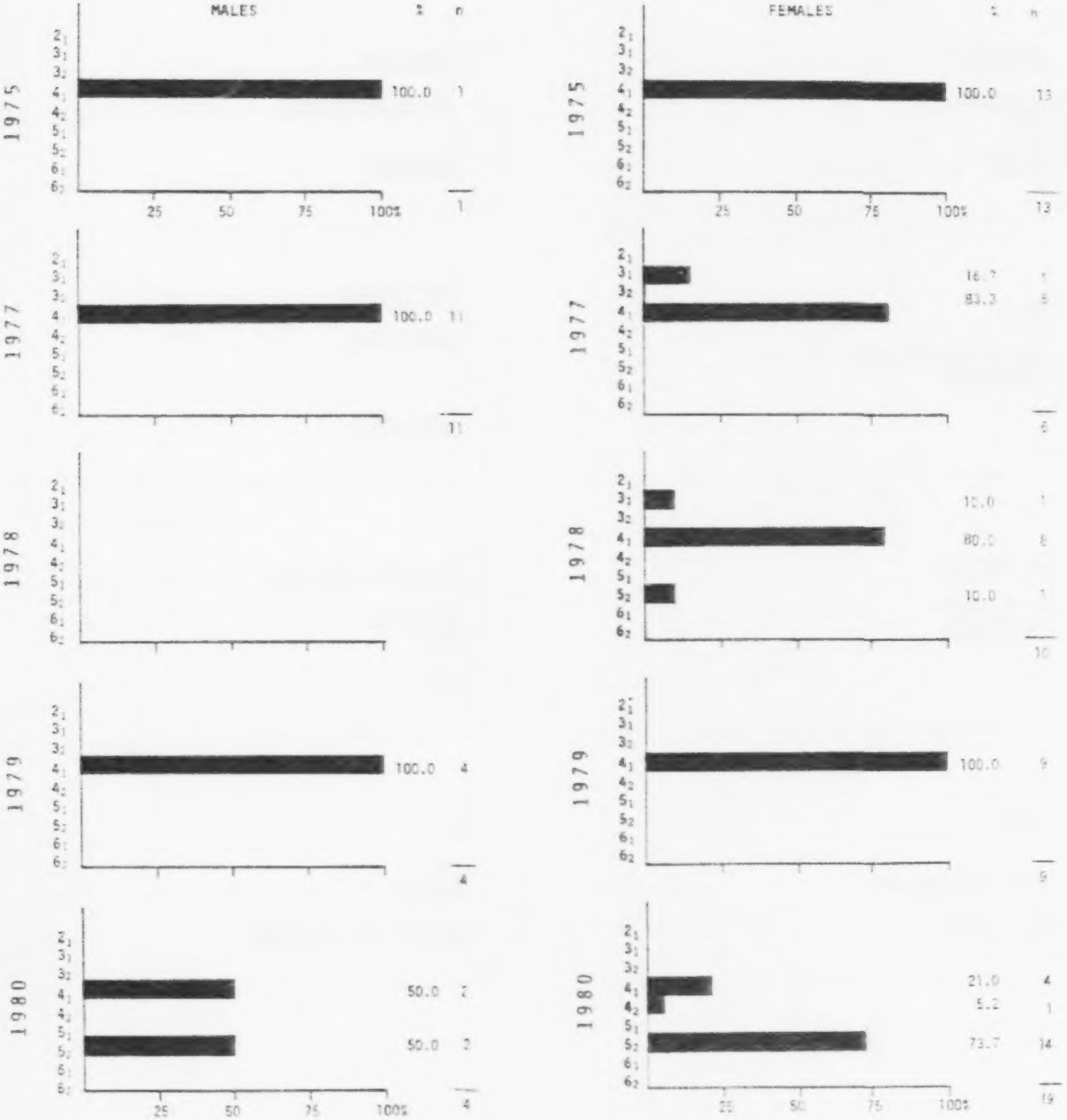


Figure 20. Length frequency distribution of chinook carcasses sampled from the Chilcotin River System, 1975-1980.

a) Chilko River

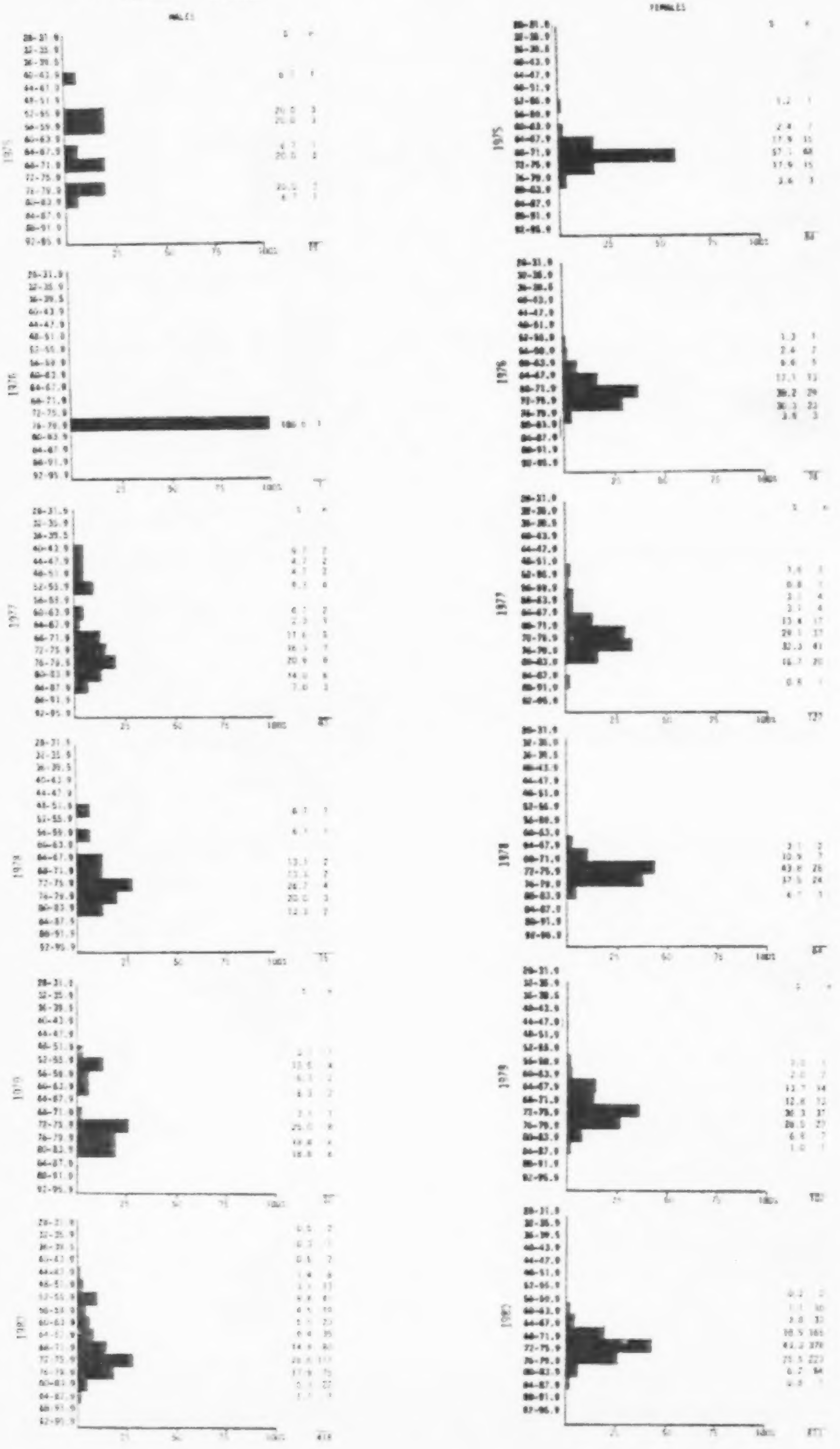


Figure 20 (cont.)

b) Chilcotin River

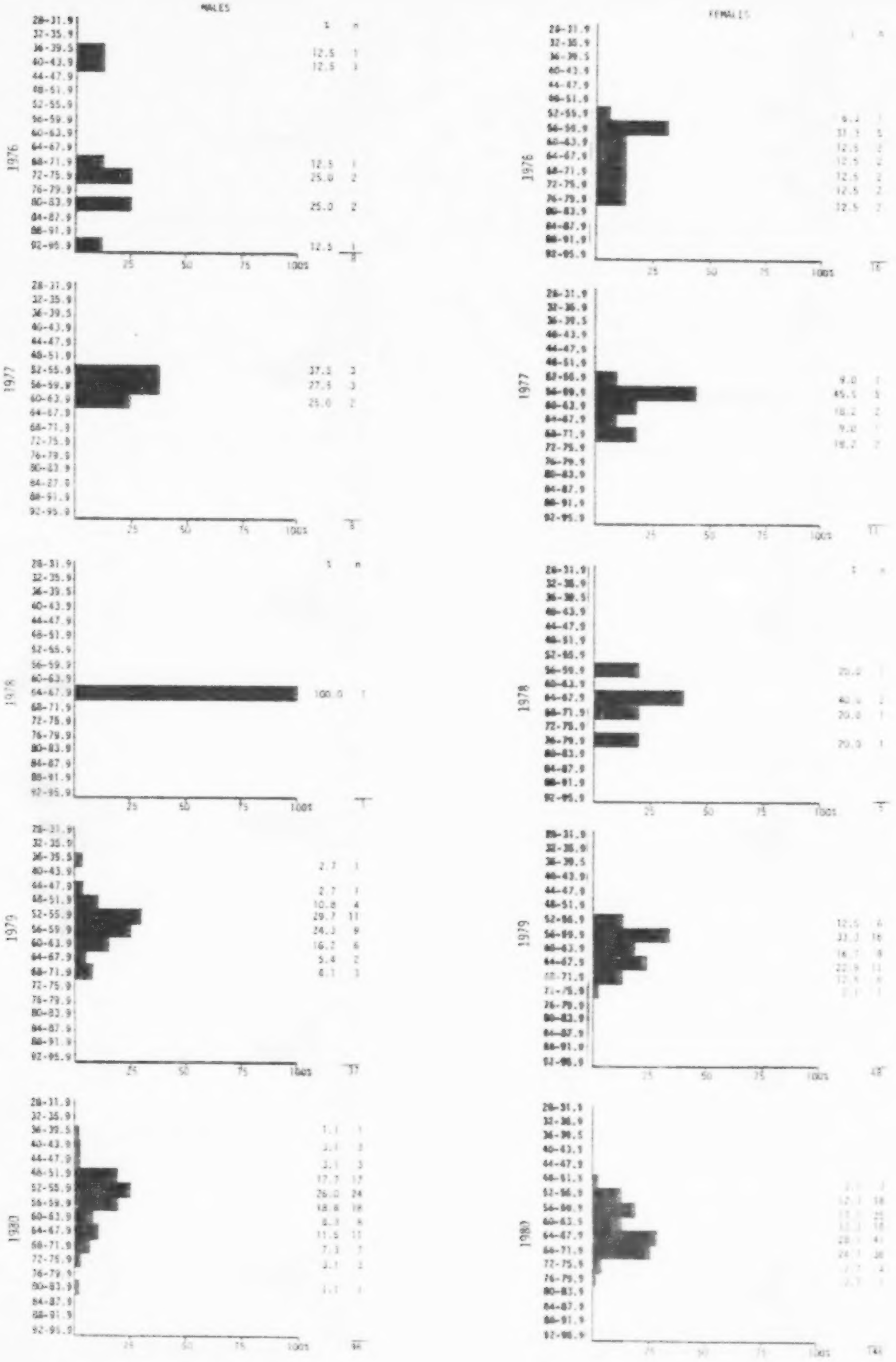


Figure 20 (cont.)

c) Elkin Creek

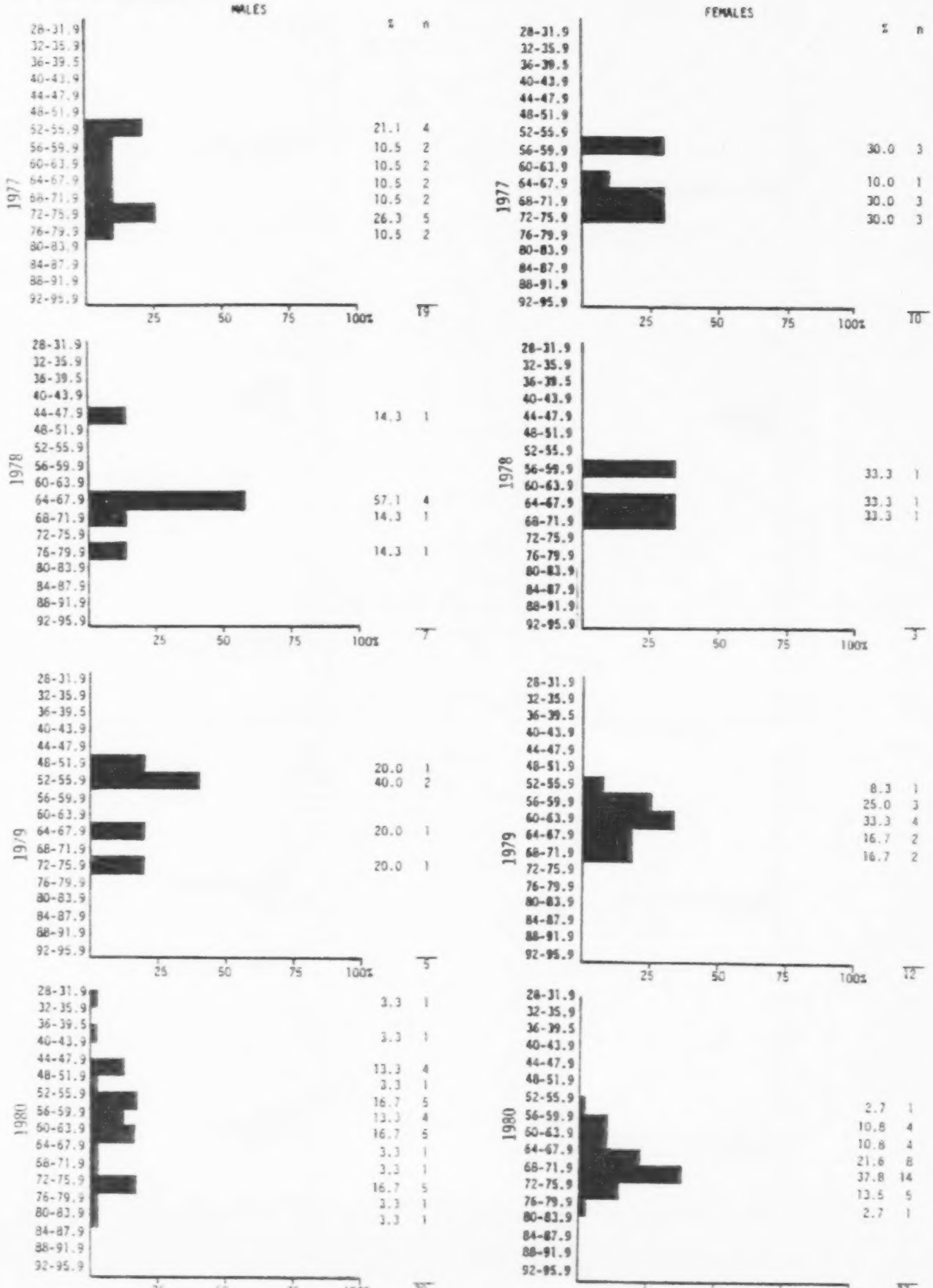
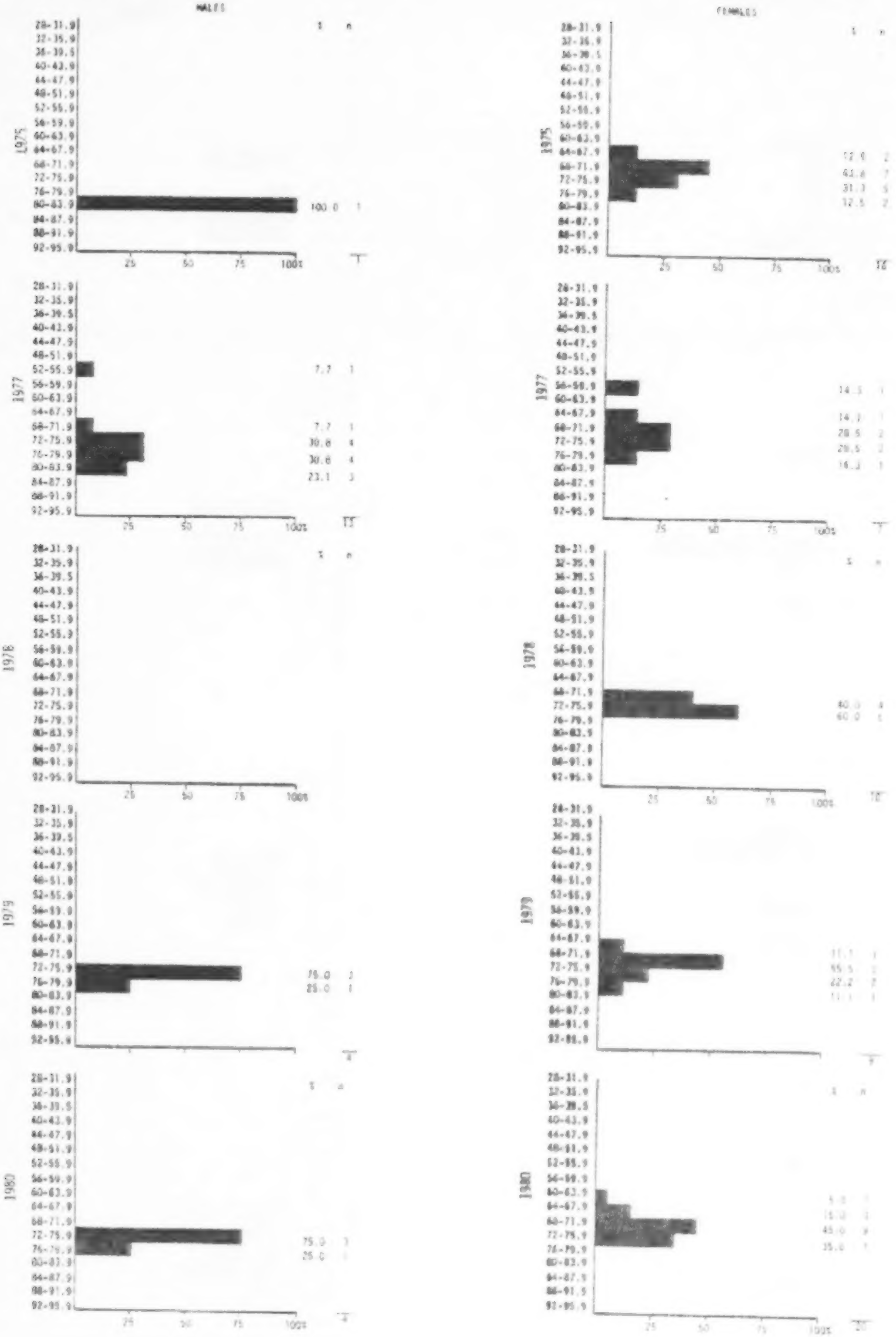


Figure 20 (cont.)

d) Taseko River



Based upon carcass recovery, the sex composition was predominantly female, with a six-year mean percent composition of 60.1% females and 39.9% males (Table 13).

From 1975 to 1979, the majority of carcasses were age 3_1, 4_1 and 4_2 (Fig. 19b; Appendix XXVI). In 1980, however, stream-type fish age 4_2 and 5_2 were more evident for both sexes (males - age 4_2: 53.8%, age 5_2: 21.2%; females - age 4_2: 37.5%, age 5_2: 33.8%).

The length frequency distribution (Fig. 20b and Appendix XXVII) and mean length (Table 14b) suggest that Upper Chilcotin River chinook are the smallest in the Chilcotin River drainage. However, this may be a result of a comparatively small sample size from 1975 to 1979, and a large sample in 1980 which contained predominantly stream-type chinook that are typically smaller than ocean-type chinook of the same age. From 1975 to 1980, 80% of the Upper Chilcotin River males and females sampled were 48-84 cm, and 52-80 cm, respectively.

The mean length by age of the Chilcotin River carcasses (Table 14b) indicated similar trends to those described for the Chilko River. Ocean-type chinook age 3_1 and 4_1 were longer than stream-type age 3_2 and 4_2 carcasses; chinook with equal ocean residence time were approximately the same length (i.e. age 3_1 -4_2 and 4_1 - 5_2); and, males age 4_1 and 5_2 were longer than females of the same age.

Elkin Creek

From 1975 to 1980, 123 carcasses were sampled on Elkin Creek, which represents 5.0% of all carcasses examined in the Chilcotin River drainage (Table 12).

The sex composition varied widely between 1977 and 1980 due to the small sample size each year and the inability to sample proportionately throughout the runs. The observed male:female percent sex composition were 65.5:34.5% in 1977, 70.0:30.0% in 1978, 29.4:70.6% in 1979 and 44.8:55.2% in 1980 (Table 13).

TABLE 14

MEAN LENGTH (cm) BY AGE CLASS OF CHINOOK SALMON CARCASSES EXAMINED ON THE CHILCOTIN RIVER SYSTEM, 1975-1980

CHILKO RIVER

		MALES							FEMALES						
		1975	1976	1977	1978	1979	1980	$\bar{\bar{x}}$	1975	1976	1977	1978	1979	1980	$\bar{\bar{x}}$
3_1	$\bar{x}$	53.5		50.4	61.8	58.2	54.8	54.8	63.5	61.8	59.4	62.6	60.5	62.8	62.4
	SE	2.00		1.90	5.25	2.50	4.10	1.29	1.11	1.85	2.12	1.69	0.94	1.89	0.86
	n	7		10	3	9	4	33	10	7	13	3	10	2	45
3_2	$\bar{x}$						40.9	40.9							
	SE						2.78	2.78							
	n						6	6							
4_1	$\bar{x}$	72.5	78.6	75.4	76.7	76.5	73.0	74.5	69.8	72.0	71.5	71.8	70.6	69.7	70.7
	SE	1.97	0.00	0.99	1.63	0.84	1.15	0.60	0.40	0.40	0.42	0.46	0.49	0.55	0.18
	n	7	1	18	6	13	30	75	67	56	81	46	64	41	355
4_2	$\bar{x}$				77.4	60.9	55.1	55.7	68.2	65.8	62.8		57.5	63.7	64.0
	SE				0.00	8.13	0.90	*1.02	0.00	1.81	4.53		0.00	0.62	0.76
	n				1	2	39	42	1	7	2		1	18	29
5_1	$\bar{x}$	80.0		86.0	75.9	81.3	83.7	82.5		77.2	77.7	76.8	78.8	78.0	78.1
	SE	0.00		0.07	0.00	0.85	1.25	1.01		0.00	1.55	0.00	1.56	2.97	0.85
	n	1		2	1	4	5	13		1	4	1	3	2	11
5_2	$\bar{x}$			76.5	80.6	79.2	73.4	73.7	77.5	75.5	74.1	71.1	71.4	70.2	70.4
	SE			1.23	0.00	0.00	0.44	0.56	0.00	0.26	0.41	2.83	0.92	1.30	0.23
	n			6	1	1	86	94	1	2	14	2	12	190	221
6_1	$\bar{x}$			83.6			82.4	82.9	74.5					71.2	72.8
	SE			0.00			0.65	0.57	0.00					0.00	1.65
	n			1			4	5	1					1	2

CHILCOTIN RIVER

		MALES							FEMALES						
		1975	1976	1977	1978	1979	1980	$\bar{\bar{x}}$	1975	1976	1977	1978	1979	1980	$\bar{\bar{x}}$
2	$\bar{x}$		38.1			41.4	41.2	41.1							
	SE		0.00			4.67	1.90	1.62							
	n		1			2	3	6							
3	$\bar{x}$			57.5		56.5	53.9	56.1		63.2	62.8	58.5	62.7	56.9	[illegible]
	SE			0.00		0.79	1.06	0.66		2.60	1.91	0.00	0.77	1.11	[illegible]
	n			1		28	7	36		4	2	1	28	6	41
3	$\bar{x}$		41.0				42.4	41.7							
	SE		0.00				0.00	0.70							
	n		1				1	2							
4	$\bar{x}$		83.2		64.8	70.3	64.7	71.6		71.0	66.1	65.2	66.5	66.1	66.7
	SE		10.82		0.00	1.40	0.85	3.94		1.09	1.87	0.00	1.19	1.14	[illegible]
	n		2		1	2	2	7		1	6	1	11	14	33
4_2	$\bar{x}$		77.0	66.8		58.6	55.9	57.0		62.0	57.5	64.2	56.5	60.4	60.1
	SE		0.00	1.56		1.10	0.74	0.78		1.31	[illegible]	0.00	1.20	0.61	[illegible]
	n		1	3		3	28	35		5	4	1	8	24	42
5_1	$\bar{x}$													69.[illegible]	69.[illegible]
	SE													0.00	0.00
	n													1	1
5_2	$\bar{x}$		76.0				70.0	71.4					71.0	67.9	67.9
	SE		4.03				1.40	1.41					0.00	1.00	0.98
	n		2				11	13					1	27	28

TABLE 14 (cont.)

ELKIN CREEK

		MALES							FEMALES						
		1975	1976	1977	1978	1979	1980	$\bar{\bar{x}}$	1975	1976	1977	1978	1979	1980	$\bar{\bar{x}}$
3.	$\bar{x}$			56.6	47.0	48.9	47.0	50.5			59.4	56.6	60.9	57.5	59.8
	SE			1.03	0.00	0.00	6.24	2.74			0.07	0.00	1.80	0.00	1.16
	n			5	1	1	3	10			2	1	6	1	10
4.	$\bar{x}$			72.3	70.0	72.5		71.5			69.1	47.0	65.9	71.0	68.4
	SE			1.40	2.25	0.00		1.10			1.65	0.00	1.62	1.73	1.03
	n			7	4	1		12			4	1	3	3	11
4.	$\bar{x}$			57.9	66.2	55.2	58.7	59.0					60.7	60.1	60.1
	SE			4.01	0.14	0.00	1.08	1.12					0.00	1.59	1.36
	n			2	2	1	10	15					1	7	8
5.	$\bar{x}$			78.1				78.1							
	SE			0.00				0.00							
	n			1				1							
5.	$\bar{x}$			72.0			74.3	73.5			71.0	70.1	69.2	69.2	69.5
	SE			1.15			2.00	1.38			0.14	0.00	0.00	0.67	0.56
	n			3			6	9			2	1	1	20	24

TASEKO RIVER

		MALES							FEMALES						
		1975	1976	1977	1978	1979	1980	$\bar{\bar{x}}$	1975	1976	1977	1978	1979	1980	$\bar{\bar{x}}$
3.	$\bar{x}$										57.4	73.0			65.2
	SE										0.00	0.00			7.80
	n										1	1			2
4.	$\bar{x}$	82.4		77.1		76.3	76.5	77.1	71.6		73.1	72.6	71.2	72.4	72.0
	SE	0.00		1.27		1.05	1.13	0.85	0.92		1.16	0.60	1.17	1.35	0.46
	n	1		11		4	2	18	13		5	8	9	4	39
4.	$\bar{x}$													66.9	66.9
	SE													0.00	0.00
	n													1	1
5.	$\bar{x}$						74.9	74.9				69.3		70.6	70.6
	SE						0.05	0.05				0.00		0.75	0.71
	n						2	2				1		14	15

From 1977 to 1979, age 3_1 and 4_1 chinook were the dominant age classes, comprising approximately 66% of carcasses sampled. These age groups were represented during 1980, (14% of carcasses examined); however, stream-type chinook age 4_2 and 5_2 were predominant, comprising 86% of carcasses recovered (Fig. 19c; Appendix XXVI).

In general, Elkin Creek chinook were intermediate in size compared with Chilko and Upper Chilcotin river samples (Table 14c; Appendix XXVII). Age 3_1 and 4_2 males were generally smaller than females of the same age; 4_1 fish were larger than 4_2 chinook, and age 5_1 chinook were absent in all years but 1977. From 1977 to 1980, 80% of Elkin Creek male and female chinook were 44-80 cm and 56-76 cm, respectively (Fig. 20c).

Taseko River

Recoveries were hampered by the inability to visually locate carcasses as a result of glacial coloration and access to the study area. From 1975 to 1980, 84 carcasses were sampled on the Taseko River (Table 12).

Based upon these limited carcass recoveries, the sex composition was predominantly female, with a six-year mean percent composition of 74.7% females and 25.3% males (Table 13). However, similar to Elkin Creek, the sex ratio varied widely between 1975 and 1980.

From 1975 to 1979, 94.4% of sampled carcasses were age 4_1. In 1980, however, 26.1% of carcasses were age 4_1 and 69.6% were age 5_2 (Fig. 19d; Appendix XXVI).

Taseko River chinook, particularly males, were consistently the largest sampled from the Chilcotin River drainage; while samples were comparatively few, 80% of the males were 76-82 cm from 1975 to 1980. Females were similar in length to Chilko River females of comparable age, and 80% were 60-80 cm (Fig. 20d; Appendix XXVII).

Consistent with the other Chilcotin River systems, the mean length of males was greater than females of similar age, and chinook with equal ocean residence time (age 4_1 and 5_2) were approximately equal length (Table 14d).

Fecundity and spawning success

Attempts to acquire females from the Chilko River for determination of fecundity were unsuccessful in 1979 (Appendix XXIV). In 1980, the fecundity of one unspawned female (age 4_1; POHL: 66 cm) was volumetrically calculated to be 5,900 which was comparable to fecundity of chinook from other upper Fraser River watercourses (Hickey and Lister, 1981; Murray et al., 1981b; Olmsted, 1980b; 1981).

From 1976 to 1980, a total of 1,097 and 418 female and male carcasses, respectively were examined for spawning success (Table 15). Of these 97.9% of females were totally spawned, 0.4% were partially spawned and 1.7% were unspawned. Among males, 87.8% were totally spawned, 2.2% were partially spawned and 9.8% were unspawned. The incidence of prespawning mortality among Chilcotin River females is consistent with observations from the Quesnel River drainage (Olmsted et al., 1981). Using estimates of egg loss through retention among Quesnel River stocks (approximately 1%), and prespawning mortality from the present study (1.7%), actual egg deposition would likely approximate 97% of potential egg deposition among Chilcotin River chinook. Prespawning mortality among males was greater than reported from other upper Fraser River tributaries (i.e. Nechako, Quesnel Blackwater, Cottonwood, Horsefly rivers; Olmsted et al., 1980b; 1981).

Race composition

The flesh color of chinook sampled on the Chilcotin River system from 1975 to 1980 is presented in Table 16 and Appendix XXVIII.

TABLE 15

SPAWNING SUCCESS OF CHINOOK SALMON CARCASSES EXAMINED ON THE CHILCOTIN RIVER SYSTEM, 1976-1980*[1]

Stream	Year	Number Sampled	Spawned		Partially Spawned		Unspawned	
			n	%	n	%	n	%
FEMALES								
Chilko River	1979	153	145	94.8			8	5.2
	1980	656	651	99.2	1	0.2	4	0.6
Upper Chilcotin River	1976	15	10	66.7	3	20.0	2	13.3
	1979	48	46	95.8			2	4.2
	1980	146	145	99.3			1	0.7
Elkin Creek	1979	12	12	100.0				
	1980	37	36	97.3			1	2.7
Taseko River	1978	1					1	100.0
	1979	9	9	100.0				
	1980	20	20	100.0				
	Σ	1,097	1,074	97.9	4	0.4	19	1.7
MALES								
Chilko River	1979	18	18	100.0				
	1980	267	239	89.5	9	3.4	19	7.1
Upper Chilcotin River	1976	2	1	50.0				
	1979	1	1	100.0				
	1980	96	90	93.8			6	6.2
Elkin Creek	1980	30	14	46.7			16	53.3
Taseko River	1980	4	4	100.0				
	Σ	418	367	87.8	9	2.2	41	9.8

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*1 Spawning success defined

TABLE 16

RACE COMPOSITION (FLESH COLOR*) OF CHINOOK SALMON CARCASSES
EXAMINED ON THE CHILCOTIN RIVER SYSTEM, 1975-1980

	MALES			FEMALES			Σ		
	Wh	Rd	Pk	Wh	Rd	Pk	Wh	Rd	Pk
CHILKO RIVER									
n	440	72	1	1010	184	23	1450	256	24
Σ		513			1217			1730	
%	85.8	14.0	0.2	83.0	15.1	1.9	83.8	14.8	1.4
UPPER CHILCOTIN RIVER									
n	99	38	5	161	50	11	260	88	16
Σ		142			222			364	
%	69.7	26.8	3.5	72.5	22.5	5.0	71.4	24.2	4.4
ELKIN CREEK									
n	54	5		55	5		99	10	
Σ	59			60			109		
%	91.5	8.5		91.7	8.3		90.8	9.2	
TASEKO RIVER									
n	17	3		54	3		71	6	
Σ	20			57			77		
%	85.0	15.0		94.7	5.3		92.2	7.8	

* Wh - White; Rd - Red; Pk - Pink.

n number carcasses examined

Chinook classified as white comprised 83.8% of Chilko River, 71.4% of Upper Chilcotin River, 90.8% of Elkin Creek and 92.2% of Taseko River samples. However, these data are somewhat suspect due to sampling inconsistencies over the six-year program, and the tendency for the red/pink color to fade as the chinook mature and die on the spawning ground.

The majority of white chinook in the Fraser River drainage have been thought to be derived from the Birkenhead, Lillooet and Harrison River systems. Birkenhead and Lillooet river chinook migrate through the lower Fraser River from March to mid-June, while Harrison River stocks migrate during September and October (Brown and Musgrave, 1979). White chinook taken by the lower Fraser River gillnet fishery in late July (DFO, unpubl. data) may therefore constitute spawners destined to the Chilcotin River system and other upper Fraser River tributaries.

Coded wire tag returns

In 1979, 681 chinook carcasses were examined for missing adipose fins, 451 from the Chilko, 193 from the Upper Chilcotin, 22 from Elkin Creek and 15 from Taseko River. Of these, three carcasses from the Chilko and two from the Upper Chilcotin lacked adipose fins (Table 17).

The three carcasses from the Chilko River were females and the adipose fins appeared to be worn down as a result of spawning rather than clipping. Furthermore, none of the three heads activated the tag detector in the lab and therefore it is questionable whether these fish were tagged. Similarly, the two heads recovered from the Upper Chilcotin River did not activate the tag detector and they may not have been tagged. Unfortunately, complete descriptions of the marked fish were not kept.

In 1980, 2,607 chinook carcasses were examined for missing adipose fins, 2,274 from the Chilko, 242 from the Upper Chilcotin, 67 from Elkin Creek and 24 from Taseko River. Of these, 13 carcasses from the Chilko and three from the Upper Chilcotin lacked adipose fins.

Eight of the 13 carcasses from the Chilko River with apparent clips had fresh wounds in the adipose region. Two such wounds were assumed to be the result of a predation or spawning and not clipping, as they could be ruled out on the basis of scale aging (i.e. no tagging occurred for that brood year). The remaining six fish with fresh wounds could have been marked, however, none of the heads recovered activated the tag detector.

One of the 13 fish had a partial adipose stub which was well healed (Photo 6), and one fish was too decomposed to properly assess the condition of the adipose region. Neither head activated the tag detector.

Finally, three of the fish had smooth well healed scars strongly indicating that they were clipped fish. However, only one head activated the tag detector and a tag was subsequently recovered for verification. The recovered tag was code 2-21-16; a 5_2 male from the 1975 brood tagged as a 1+ juvenile in 1977.

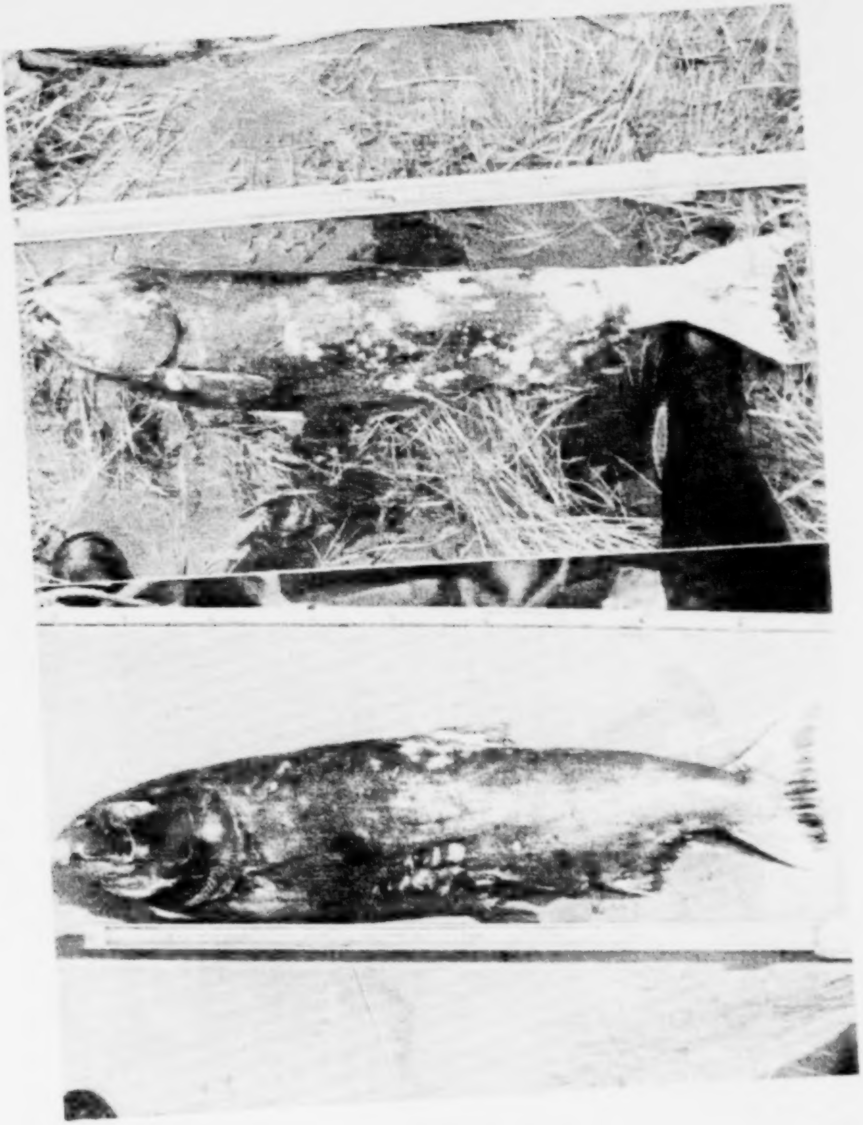

Photo 6. Two marked chinook lacking adipose fins, Chilko River. Upper is a partial clip; lower is a smooth, complete clip.

TABLE 17

NUMBER OF CHINOOK CARCASSES EXAMINED FOR MISSING ADIPOSE FINS AND CODED WIRE TAGS ON THE CHILCOTIN RIVER SYSTEM, 1979 - 1980.

River	Number Sampled		Number Adipose Missing		Number CWT Recovered	
	1979	1980	1979	1980	1979	1980
Chilko River	451	2274	3	13	0	1
Upper Chilcotin River	193	242	2	3	0	0
Elkin Creek	22	67	0	0	0	0
Taseko River	15	24	0	0	0	0
Σ	681	2607	5	16	0	1

TABLE 18

CONDITION OF CHINOOK CARCASSES LACKING ADIPOSE FINS, 1980.

River	Section	Date	Age[1]	Brood Year	Tag Year	Tag Code	Adipose Description	Mark Potential
Chilko River	3	17/09	5_2	1975	1977	-	smooth/healed	good
	3	17/09	5_2	1975	1977	-	stub/healed	good
	5	22/09	5_2	1975	1977	-	fresh wound	poor
	5	22/09	5_2	1975	1977	2-21-16	smooth healed	marked
	5	26/09	5_2	1975	1977	-	fresh wound	poor
	5	26/09	6_2	1974	1976	-	fresh wound	no mark
	1	26/09	5_1	1975	1976	-	fresh wound	no mark
	2	27/09	4_2	1976	1978	-	fresh wound	poor
	3	27/09	5_2	1975	1977	-	smooth healed	good
	5	29/09	5_2	1975	1977	-	decomposed	poor
	4	04/10	4_2	1974	1978	-	fresh wound	poor
	5	04/10	5_2	1975	1977	-	fresh wound	poor
	5	04/10	4_2	1976	1978	-	fresh wound	poor
Upper Chilcotin River	2	09/09	4_2	1976	1978	-	fresh wound	poor
	2	09/09	3_2	1977	1979	-	fresh wound	poor
	7	11/09	R	-	-	-	fresh wound	poor

[1] - Age from scale interpretation

R - Regenerate

All three carcasses (with apparent adipose clips) recovered on the Upper Chilcotin River had fresh wounds in the adipose region. None of the recovered heads activated the tag detector.

These data are insufficient to calculate mark rates at this time. The fact that only one tag could be recovered from the four heads collected on the Chilko River in 1980 from fish with well healed adipose clips suggest that the retention of tags in spawning ground samples is very low. Alternatively, the electronic detector may not have been sensitive enough to detect the tag or the tag may not have been remagnetized.

During 1981, all heads from potentially clipped fish were x-rayed in addition to electronic detection. In 2 cases electronic detection failed to initially detect a tag in a head where the tag had been detected by x-ray. Partial dissection was required before the electronic detector could detect the tag.

Additional recoveries and analysis of 1977 and 1978 brood chinook is required before an estimate of spawning ground retention can be made and mark rates calculated for each brood year.

ACKNOWLEDGEMENTS

Various personnel of the Department of Fisheries and Oceans, Vancouver, contributed to the 1975 - 1979 studies. The program was initiated by F.J. Fraser. L. Kahl supervised field studies from 1975 to 1979 and prepared a preliminary report from which data were incorporated into this manuscript. C. Whyte, G. Poley, P. Fee and R. West were involved in field studies; J. Barnett, P. Burns, I. Carmichael, J. Cook, R. Cook, J. Donaldson, F. Helmer, S. Lyne, D. Meyers, P. Preston, N. Schubert and P. Sprout provided short term field support or tagged juvenile salmonids. Y. Yole performed age analyses from scale samples.

In 1980, E.V.S. Consultants Ltd. field studies were supervised by P. Delaney and J. Hammond. D. Munday, D. Davies, M. Sidney and R. Olmsted provided technical support. B. Pearce provided the terms of reference for the program. P. Fee assisted during the field studies, completed selected computer analyses and provided comments on the first draft. R. Harrison, P. Starr and G. Vigers provided editorial support. Drafting was completed by L. Borleske; the manuscript was typed by D. MacNicol and M. Mees.

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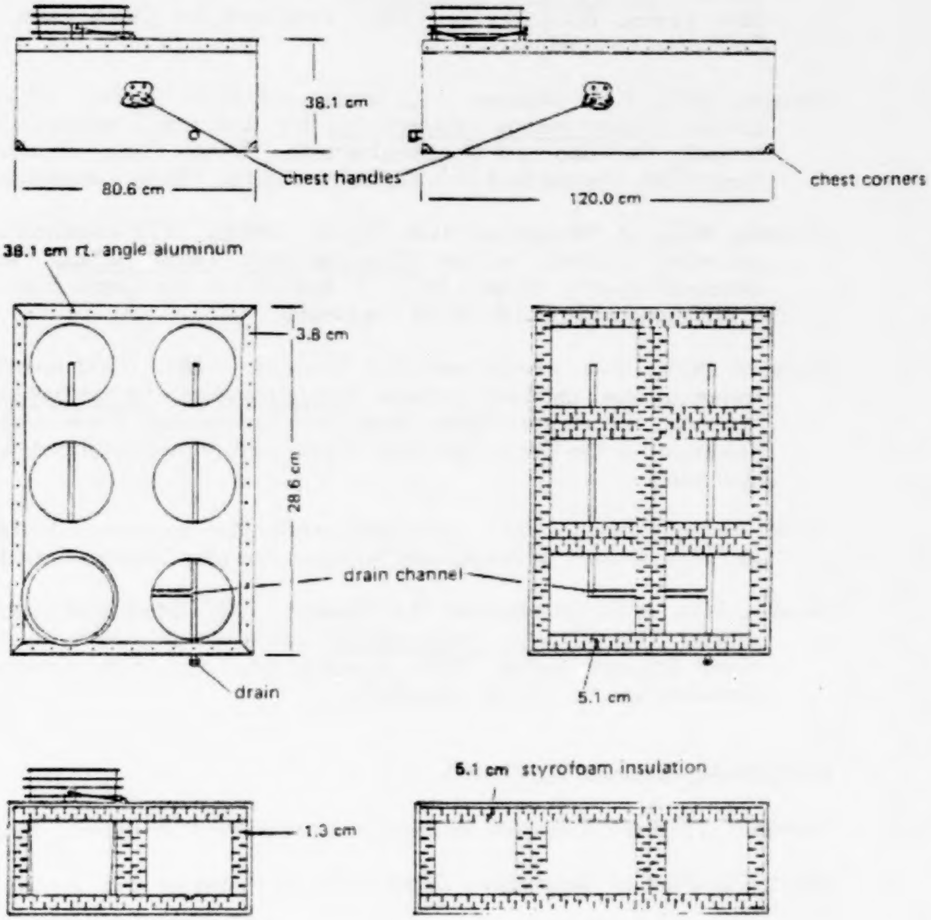
APPENDIX I

PLYWOOD TRANSPORT BOX

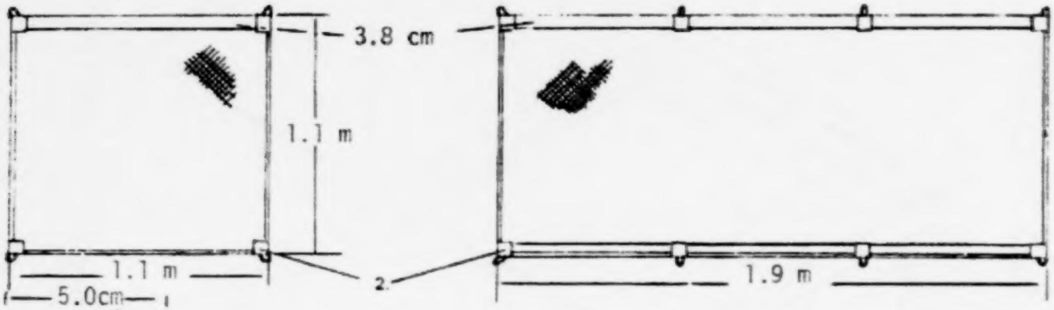

38.1 cm
chest handles
chest corners
80.6 cm
120.0 cm
38.1 cm rt. angle aluminum
3.8 cm
28.6 cm
drain channel
drain
5.1 cm
5.1 cm styrofoam insulation
1.3 cm

Material List for Two Fry Bucket Transporters

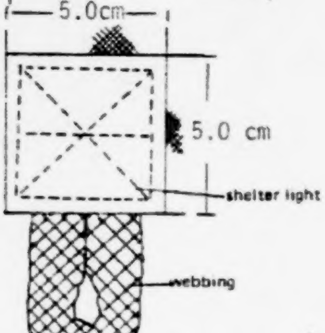
Item:	Quantity:
1.3 cm - 1.2x2.4 m plywood	3 sheets
5.1 cm - 1.2x2.4 m styrofoam insulation	2 sheets
Chest handles	8
Chest corners	8
3.8 cm rt angle aluminum	8.3 m
23 L saturn 6 buckets	12
1.3 cm wood screws	240
1.3 cm id threaded pipe	20.3 cm
Threaded pipe caps	2

APPENDIX II

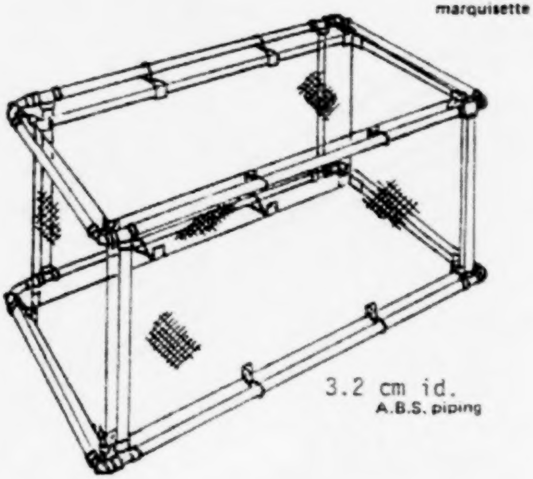
IN-STREAM REARING PEN CONSTRUCTED WITH MARQUISETTE NET AND A.B.S. PIPE FRAME

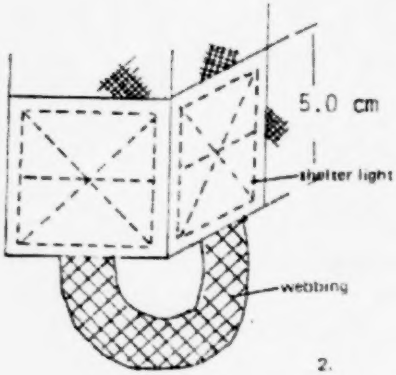

3.8 cm
1.1 m
1.1 m
2.
1.9 m

1.


5.0cm
5.0 cm
shelter light
webbing

1.


marquisette
3.2 cm id.
A.B.S. piping


5.0 cm
shelter light
webbing

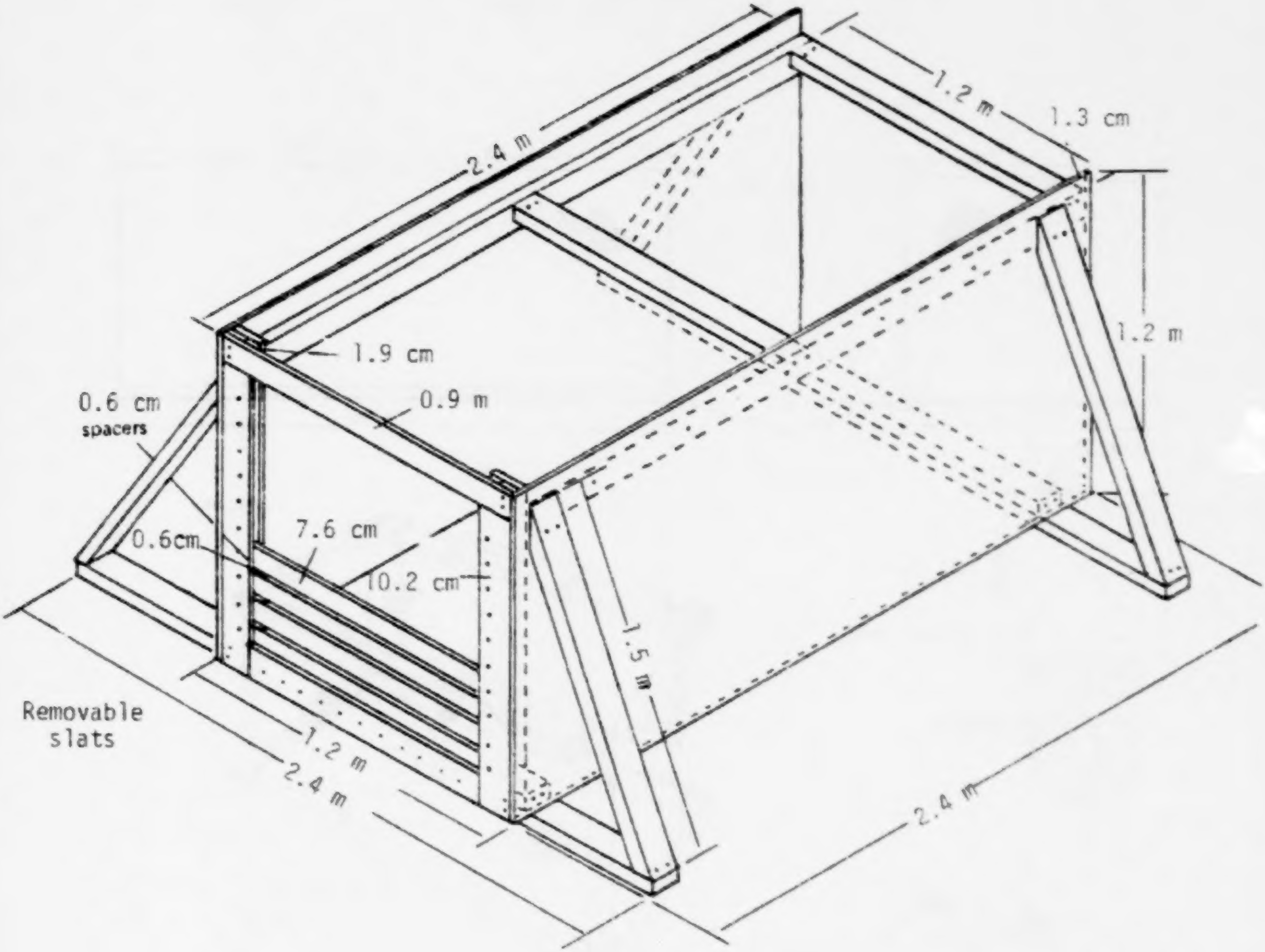
2.

Fry Holding Pen, Marquisette and A.B.S. Frame.

Marquisette No. 281 (100% Dupont nylon)

APPENDIX III

PLYWOOD IN-STREAM RACEWAY FOR CONTROLLING WATER FLOW THROUGH FRY REARING PENS


2.4 m
1.2 m
1.3 cm
1.2 m
1.9 cm
0.6 cm spacers
0.9 m
0.6cm
7.6 cm
10.2 cm
1.5 m
Removable slats
1.2 m
2.4 m
2.4 m

Materials List for One Raceway

Item:	Quantity:
5.1x10.2 cm x 2.4 m boards	9
1.3 cm plywood - 1.2x2.4 m	2 sheets
1.9 cm plywood - 1.2x2.4 m	1 sheet
0.6 cm spacers - 1.9x3.8 cm	18

APPENDIX IV

OREGON PELLET FEEDING CHART UTILIZED ON THE CHILCOTIN RIVER (1977) AND CHILKO RIVER (1978 - 1979)

Feeding level (L)* expressed as ratio of daily ration divided by fry total weight. Feeding frequency (F) expressed as number of days to feed per week and number of feedings per day. Example: 7/4 means feed 7 days per week, 4 times per day; E/1 means feed every other day, one feeding per day.

Ave. H_2O Temp. (F)	FISH SIZE (Number Per Pound)											
	800-300		300-200		200-135		135-90		90-60		60-40	
	L	F	L	F	L	F	L	F	L	F	L	F
35	2.7	7/5	2.3	7/4	1.8	7/2	1.6	6/1	1.3	5/1	1.4	E/1
6	2.8	7/5	2.4	7/4	1.9	7/2	1.8	6/1	1.4	5/1	1.4	E/1
7	2.9	7/5	2.5	7/4	2.0	7/2	1.9	6/1	1.5	5/1	1.6	E/1
8	3.0	7/5	2.6	7/4	2.1	7/2	2.0	6/1	1.7	5/1	1.8	E/1
9	3.2	7/5	2.7	7/4	2.2	7/2	2.1	6/1	1.8	5/1	1.8	E/1
40	3.4	7/5	2.8	7/4	2.3	7/2	1.9	7/1	1.6	6/1	1.3	5/1
1	3.6	7/5	2.9	7/4	2.4	7/2	2.0	7/1	1.8	6/1	1.3	5/1
2	3.8	7/5	3.0	7/4	2.5	7/2	2.1	7/1	1.9	6/1	1.4	5/1
3	4.0	7/5	3.1	7/4	2.6	7/2	2.2	7/1	2.0	6/1	1.5	5/1
4	4.2	7/5	3.3	7/4	2.7	7/2	2.3	7/1	2.1	6/1	1.7	5/1
45	4.4	7/5	3.5	7/4	2.8	7/2	2.4	7/1	2.2	6/1	1.8	5/1
6	4.6	7/5	3.7	7/4	2.9	7/2	2.5	7/1	2.3	6/1	2.0	5/1
7	4.8	7/5	3.9	7/4	3.0	7/2	2.6	7/1	2.5	6/1	2.1	5/1
8	5.0	7/5	4.1	7/4	3.2	7/2	2.7	7/1	2.6	6/1	2.2	5/1
9	5.3	7/5	4.3	7/4	3.4	7/2	2.8	7/1	2.7	6/1	2.4	5/1
50	5.6	7/5	4.5	7/4	3.6	7/2	2.9	7/1	2.8	6/1	2.1	6/1
1	5.9	7/5	4.7	7/4	3.8	7/2	3.0	7/1	2.9	6/1	2.2	6/1
2	6.2	7/5	4.9	7/4	4.0	7/2	3.2	7/1	3.0	6/1	2.3	6/1
3	6.5	7/5	5.1	7/4	4.2	7/2	3.4	7/1	3.2	6/1	2.5	6/1
4	6.8	7/5	5.4	7/4	4.4	7/2	3.6	7/1	3.3	6/1	2.6	6/1
55	7.1	7/5	5.7	7/4	4.6	7/2	3.8	7/1	3.5	6/1	2.7	6/1
6	7.5	7/5	6.0	7/4	4.8	7/2	4.0	7/1	3.7	6/1	2.8	6/1
7	7.9	7/5	6.3	7/4	5.0	7/2	4.2	7/1	4.0	6/1	2.9	6/1
8	8.3	7/5	6.6	7/4	5.3	7/2	4.4	7/1	4.2	6/1	3.0	6/1
9	8.7	7/5	6.9	7/4	5.6	7/2	4.6	7/1	4.4	6/1	3.2	6/1
60	9.1	7/5	7.2	7/4	5.9	7/2	4.8	7/1	4.7	6/1	3.3	6/1

RECOMMENDED PELLET SIZE

Fish Size (Number Per Pound)	Pellet Size (Inches)
800 - 500	1/32
500 - 250	3/64
250 - 150	1/16
150 - 50	3/32

*From R.V. Moore Co. Inc., LaConner, WA

APPENDIX V

PHYSICAL AND CHEMICAL CHARACTERISTICS RECORDED FOR VARIOUS WATERCOURSES IN THE CHILCOTIN RIVER SYSTEM, 1975-1978

RIVER	YEAR	DATE, TIME	SAMPLING LOCATION	AVERAGE WETTED WIDTH (m)	AVERAGE DEPTH (m)	SURFACE VELOCITY (mps)	BOTTOM* COMPOSITION	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN CONCENTRATION (ppm)	pH	WATER COLOUR AND VISIBILITY (m)
Chilko River	1975	27/09 1045h 1345h	Small side channel 1.6 km downstream from Henry's Crossing	10.0	0.3	Low	Cobble, pebble, light silting	11.3 12.0		7.5	Clear
		29/09 0938h 1200h	183m upstream from mouth of Lingfield Creek	82.0	1.2		Cobble, pebble, sand, boulder	9.2 11.5		7.4 7.5	Clear
	1976	15/08 0830h	Chilko Lake outlet					12.0			
		24/09 1130h	100m upstream from mouth of Lingfield Creek	97.0	1.3		Cobble, pebble, boulder, sand, silt	11.0	10.0	7.3	Clear
	1977	11/09 1515-1600h	3km downstream from Henry's Crossing Bridge	40.0	1.5		Cobble		10.0	7.4	Light green, clear
	1978	21/04 1500h	Henry's Crossing Bridge					6.5			
		22/04	Henry's Crossing Bridge					6.0	15.0	7.4	
		23/04 0845h	Henry's Crossing Bridge					4.0			
		02-03/05 1000h	Henry's Crossing Bridge					4.5			
		04/05 1130h	Henry's Crossing Bridge					5.5			
		05/05 1700h	Henry's Crossing Bridge					9.0			
		09/05 1500h	Side channel east of Henry's Crossing Bridge					11.5			
		13/05 1800h	Henry's Crossing Bridge					8.0			
		15/05 0930h	Henry's Crossing Bridge					5.5			

APPENDIX V (cont.)

RIVER	YEAR	DATE, TIME	SAMPLING LOCATION	AVERAGE WETTED WIDTH (m)	AVERAGE DEPTH (m)	SURFACE VELOCITY (mps)	BOTTOM* COMPOSITION	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN CONCENTRATION (ppm)	pH	WATER COLOUR AND VISIBILITY (m)
Upper Chilcotin River	1976	16/05 1015h	Henry's Crossing Bridge					6.5			
		18/05 0930h 1215h	Side channel east of Henry's Crossing Bridge					10.0 15.0			
		16/08	Chezacut Crossing	10.7	1.2			13.5			Mud brown, turbid
		30/08 1145h	Chezacut Crossing					14.0			Visibility 0.9
		13/09 1600-1620h	Redstone Bridge	16.8	0.8		Cobble, granule, sand, boulder	11.5		8.5	Brown
	1977	06/04 2230h	River Road Bridge					0.5			Turbid
		15/09 1045-1110h	Redstone	15.0	0.5		Angular cobbles, boulders	10.5	13.0	9.0	Brown 1.0
		27/09 1315-1330h	River Road Bridge	6.0	1.5			7.0	15.0	8.5	Brown 1.0
		28/09 1400-1445h	Outlet of Chilcotin Lake	30.0	0.3	1.3	Cobble, boulder, sand, pebble	7.0			Brown 1.0
	1978	15/09 1700h	Near outlet of Chilcotin Lake					9.0	17.0	9.0	
Chilcotin River	1976	25/09 0915h	Side channel 14km upstream from Alexis Creek	15.2	0.6		Pebble, cobble, granule,		11.0		
		25/09 1030h	Side channel 12km upstream from Alexis Creek	19.1	0.6		Pebble, cobble, silt		11.0	7.7	
		27/09 1500-1515h	Side channel near Alexis Creek Bridge	5.2	0.3		Boulder, cobble, pebble, silt, clay	12.0		7.7	Greyish green, moderately clean
	1977	06/04	Bull Canyon Recreational site	73.2	0.8	0.9		1.5			Turbid

APPENDIX V (cont.)

RIVER	YEAR	DATE, TIME	SAMPLING LOCATION	AVERAGE WETTED WIDTH (m)	AVERAGE DEPTH (m)	SURFACE VELOCITY (mps)	BOTTOM* COMPOSITION	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN CONCENTRATION (ppm)	pH	WATER COLOUR AND VISIBILITY (m)
		06/04 1500h	Alexis Creek Bridge					2.0			Turbid
		21/05 1230h	Hanceville Bridge					9.0	14.0	7.8	
		30/05 1400h	Hanceville Bridge					13.0	11.0	8.0	
		10/06 0900h	Hanceville Bridge					11.0	16.0	7.5	
		14/06 1430h	Hanceville Bridge					13.0	14.0	8.0	
		25/06 1015h	Hanceville Bridge					12.5	14.0	7.5	
Elkin Creek	1976	27/08 pm.	Bridge 4km downstream from outlet of Elkin Lake	5.3	0.6	Swift	Cobble	12.5			
	1977	31/08 1145-1230h	Between Vedan and Elkin Lake	10.0	0.2	1.3	Cobble pebble, boulder, granule, sand	14.0	12.0	8.3	Greenish brown to bottom
		31/08 1515-1600h	Outlet of Elkin Lake	10.0	0.4	1.5	Cobble and pebble	15.5	11.0	8.3	Tea brown to bottom
Taseko River (Downstream of Taseko Lakes)	1975	24/09 am	Outlet of Taseko Lake					9.0			Milky green, visibility poor
	1977	26/08 1500-1545h	20km downstream from Taseko Lake outlet	22.0	1.0		Boulder and cobble	13.0	10.0		Green, 0.3
		13/09 1400-1445h	Outlet of Taseko Lakes	100.0	1.0	0.2	Pebble, cobble, granule, sand	10.0	13.0		Greyish green, 0.3
	1978	14/09 1225-1415h	Outlet of Taseko Lakes					11.5	13.0	6.8	

APPENDIX V (cont.)

RIVER	YEAR	DATE, TIME	SAMPLING LOCATION	AVERAGE WETTED WIDTH (m)	AVERAGE DEPTH (m)	SURFACE VELOCITY (mps)	BOTTOM* COMPOSITION	WATER TEMPERATURE (°C)	DISSOLVED OXYGEN CONCENTRATION (ppm)	pH	WATER COLOUR AND VISIBILITY (m)
Upstream of Taseko Lakes	1977	28/08 0830-0915h	Mouth	12.0	1.0	1.7	Pebble, cobble, silt and clay, boulder	6.0	13.0	7.1	Greyish green, 0.9
		28/08 1315-1400h	21.6km upstream from mouth	20.0	0.6	2.5	Pebble, cobble, granule, silt and clay, sand	7.5	13.0		Green, 0.6
Chilanko River	1976	31/08 am.	Near confluence with Chilcotin River	6.1	0.6		Pebble sand, silt	13.0			
	1977	28/09 1700-1745h	23km upstream from confluence with Chilcotin River	15.0	0.4	0.2	Silt and clay, cobble, sand, granule, pebble	8.0	15.0	8.5	Brown, 1.0
Lord River	1977	29/08 0830-0915h	Mouth	27.0	0.9	0.8	Silt and clay, cobble, pebble, sand	7.0	12.0	7.2	Milky green
		29/08 1400-1445h	At confluence with Falls River	25.0	2.0		Silt and clay, sand pebbles	9.0	14.0	7.1	Milky, 0.1
Chaunigan Lake	1977	31/08 1000-1045h	Outlet of Lake				Pebble, some boulder	12.5	12.0	8.5	Clear, 1.0

*Listed in order of decreasing percentage composition

APPENDIX VI

RESULTS OF WATER QUALITY ANALYSES FOR SAMPLES COLLECTED FROM THE CHILKO RIVER AT THE LAKE OUTLET, 1979

a. Dissolved and extractable metals:

	Detection Limit (mg/L)	Recommended* Level	Sample Level Sept. 27/79	Sample Level Oct. 6/79[c]
Aluminum	0.090	0.1	<0.09	
Antimony	0.080	0.5	<0.08	
Arsenic	0.150	a	<0.15	
Barium	0.003	1	0.0074	
Cadmium	0.015	0.003[b]	<0.01	
Calcium	0.025	4-150	8.83	9.01
Chromium	0.020	0.05	<0.015	
Cobalt	0.020	a	<0.015	
Copper	0.010	0.03[b]	<0.01	
Iron	0.020	0.3	0.025	<0.01
Lead	0.085	0.03	<0.08	
Magnesium	0.025	10	0.922	0.972
Manganese	0.004	0.05	<0.003	
Mercury	0.100	0.0002	<0.1	
Molybdenum	0.150	a	<0.15	
Nickel	0.080	a	<0.08	
Phosphorus	-	a	<0.3	
Potassium	0.3	a	<0.488	
Selenium	0.10	a	<0.15	
Sodium	0.030	a	<1.04	1.18
Strontium	0.0095	a	0.0399	0.0405
Tin	0.020	a	<0.2	
Titanium	0.0085	a	<0.009	
Vanadium	0.090	a	<0.05	
Zinc	0.045	a	<0.02	

b. Residues, nutrients and water quality parameters:

	Detection Limits	Recommended* Level	Sample Level Sept. 27/79	Sample Level Oct. 6/79[c]
Filterable residue	1.0 mg/L	2000	40.0	
Non-filterable residue	5 mg/L	25	<5	
Turbidity	0.5 F.T.U.	15-30	<1.0	
Alkalinity	0.5 mg/L	10-400	22.0	
Hardness	0.2 mg $CaCO_3$/L	10-400	25.8	26.5
Conductivity	0 μmhos/cm	150-500	54.0	
Total phosphate	0.005 mg/L	0.1	<0.0050	
Ammonia	0.005 mg/L	0.05	0.0087	
Nitrite	0.005 mg/L	0.5	<0.0050	
Nitrate	0.01 mg/L	3-4	<0.010	
pH lab value		6.5-8.5	7.4	
Sulfate	1.0 mg/L	90	4.96	
Chloride	0.5 mg/L	170	<0.50	
Silica	0.5 mg/L	10-60	0.98	0.91

c. Extractable metal analysis at a greater detection sensitivity for five toxic metals:

	Detection Limit (mg/L)	Reading (mg/L) Sept. 27/79	Reading (mg/L) Oct. 6/79[c]
Mercury	0.00020	d	0.00020
Lead	0.0010	0.0010	
Cadmium	0.0010	0.0010	
Zinc	0.0010	0.0017	0.0010
Copper	0.0010	0.0010	

[a] No level has been determined; [b] levels for hard (<100 mg $CaCO_3$) water only; [c] if no reading is given, it is the same as the September 27 reading; [d] no sample was taken.

*Environmental Protection Agency (1976)

APPENDIX VII

PHYSICAL DATA, CHILCOTIN/CHILKO RIVERS, APRIL-AUGUST 1977

DATE	WATER TEMPERATURE (°C)						WATER DISCHARGE* (m³/sec)		STAFF GAUGE** (m)
	Chilcotin R. (River Road Br.) T2			Chilcotin R. (Hanceville Br.) T1			Chilko R. WD2	Chilcotin R. WD1	
	max	min	mean	max	min	mean			
28/04							39.9	104.1	
29/04							42.5	110.4	
30/04							44.2	116.9	
01/05							45.3	116.0	
02/05							48.1	115.2	
03/05							50.1	115.2	
04/05				10.0	9.0	9.5	50.4	112.6	
05/05	8.5	7.5	8.0	9.0	7.0	8.0	50.1	107.8	
06/05	10.0	7.0	8.5	10.5	6.5	8.5	50.4	106.7	
07/05	11.0	7.5	9.3	12.0	7.0	9.5	50.9	105.0	
08/05	12.0	9.5	10.8	13.0	8.5	10.8	52.6	107.5	
09/05	12.0	10.5	11.8	13.0	9.0	11.0	53.5	109.8	
10/05	13.0	11.0	12.0	12.5	9.0	10.8	55.5	112.9	
11/05	12.5	11.0	11.8	11.5	9.5	10.5	58.0	114.9	-0.24
12/05	12.0	9.5	10.8	11.5	8.5	10.0	59.4	115.2	-0.28
13/05	11.5	9.5	10.5	11.5	7.0	9.3	59.7	112.9	-0.24
14/05	11.0	9.5	10.3	11.0	6.5	8.8	57.7	108.4	-0.13
15/05	13.5	9.0	9.8	11.0	6.0	8.5	55.5	103.9	-0.05
16/05	10.5	9.5	10.0	12.0	5.0	8.5	55.5	101.3	0.06
17/05	10.5	8.5	9.5	11.0	7.0	9.0	57.2	103.9	0.11
18/05	10.0	8.5	9.5	11.0	8.5	9.8	56.9	106.4	0.01
19/05	11.0	8.5	9.8	10.0	7.0	8.5	56.9	106.4	0.01
20/05	10.5	9.5	10.0	10.5	7.0	8.3	57.7	105.8	0.01
21/05	10.5	9.0	9.8	10.0	7.0	8.5	57.5	104.1	0.01
22/05	11.5	9.5	10.5	11.0	7.0	9.0	56.3	101.0	0.01
23/05	11.5	10.0	10.0	10.0	7.0	8.5	56.0	97.3	-0.26
24/05	11.5	10.0	10.8	10.0	8.0	9.0	57.7	100.2	-0.29
25/05	12.0	9.0	10.5	11.0	6.0	9.5	58.0	100.2	-0.29
26/05	13.0	10.5	11.8	11.0	8.0	9.5	57.7	100.2	-0.24
27/05	12.0	9.5	10.8	10.5	7.0	8.8	56.9	95.7	-0.24
28/05	12.0	9.0	10.5	10.5	6.5	8.5	54.9	90.8	-0.23
29/05	13.0	10.0	11.5	11.0	7.5	9.3	53.8	86.9	-0.21
30/05	13.0	10.5	11.8	11.0	7.5	9.3	54.1	84.6	-0.21
31/05	13.0	11.0	12.0	11.5	8.0	9.8	53.8	82.4	-0.19
01/06	11.0	11.0	12.0	11.5	8.0	9.8	54.6	82.1	-0.19
02/06	[illegible]	11.0	12.3	12.0	8.0	10.0	54.9	83.5	-0.19
03/06	13.5	11.0	12.0	13.0	8.5	10.8	54.6	82.4	-0.19
04/06	13.0	11.0	12.0	12.5	9.5	11.0	55.5	81.5	-0.17
05/06	14.5	11.0	12.8	13.5	8.5	11.0	56.3	82.1	-0.19
06/06	17.5	13.5	15.5	16.5	10.5	13.5	57.2	83.2	-0.17
07/06	18.0	15.0	16.5	17.0	12.0	14.5	69.1	95.4	0.25
08/06	17.0	15.5	16.3	14.5	12.0	13.3	86.0	118.9	0.07
09/06	16.0	13.0	14.5	12.0	9.0	10.5	100.8	133.3	0.13
10/06	15.0	12.0	13.5	12.5	8.5	10.5	105.3	136.7	0.16
11/06	15.5	12.5	14.0	13.0	9.0	11.0	108.1	136.9	0.16
12/06	16.5	13.5	15.0	13.5	9.5	11.5	110.4	138.1	0.19
13/06	16.0	14.5	15.3	13.0	10.5	11.8	114.6	142.6	0.20
14/06	15.0	13.5	14.3	11.5	9.5	10.5	120.0	149.4	0.15
15/06	16.0	13.5	14.8	11.5	9.0	10.3	124.8	157.3	0.17
16/06	16.0	13.5	14.8	12.5	9.5	11.0	129.6	167.3	0.19
17/06	16.0	13.5	14.8	14.0	10.5	12.3	138.1	175.7	0.20
18/06	16.5	14.0	15.3	14.5	11.5	13.0	149.7	186.8	0.30
19/06	16.5	14.0	15.3	14.0	12.5	13.3	163.0	200.9	0.27

APPENDIX VII (Cont.)

DATE	WATER TEMPERATURE (°C)						WATER DISCHARGE* (m³/sec)		STAFF GAUGE** (m)
	Chilcotin R. (River Road Br.) T2			Chilcotin R. (Hanceville Br.) T1			Chilko R. WD2	Chilcotin R. WD1	
	max	min	mean	max	min	mean			
20/06	16.5	14.0	15.3	13.0	11.5	12.3	176.3	213.9	-
21/06	17.0	14.5	15.8	12.5	11.5	12.0	185.6	222.2	0.40
22/06	17.0	14.5	15.8	12.5	11.5	12.0	186.5	226.1	0.58
23/06	17.0	15.0	16.0	12.0	10.5	11.3	189.0	224.4	0.60
24/06	17.0	15.0	16.0	13.0	11.0	12.0	190.5	220.7	0.55
25/06	16.0	14.0	15.0	12.0	11.0	11.5	191.3	219.0	0.54
26/06	15.0	13.5	14.3	12.0	11.0	11.5	193.0	222.2	0.36
27/06	16.0	13.5	14.8	13.0	11.0	12.0	191.3	221.3	0.55
28/06	15.5	14.5	15.0	12.5	11.0	11.0	187.9	216.8	0.45
29/06	16.0	13.5	14.8	13.0	11.0	12.0	180.6	211.1	0.28
30/06	16.0	14.5	15.3	13.0	12.0	12.5	176.6	202.6	0.28
01/07	15.5	14.0	14.8	12.5	11.5	12.0	180.3	199.5	0.27
02/07	14.0	12.5	13.3	11.5	10.5	11.0	192.2	215.1	0.43
03/07	14.0	12.0	13.0	12.0	10.0	11.0	191.6	223.3	0.35
04/07	13.5	12.0	12.8	11.5	10.5	11.0	187.6	217.1	0.30
05/07	13.0	12.0	12.5	10.5	10.0	10.3	184.2	213.4	0.25
06/07	14.0	11.5	12.8	11.5	9.5	10.5	182.3	213.1	0.24
07/07	15.5	12.0	13.8	12.5	10.5	11.5	175.5	210.3	0.00
08/07	15.5	13.0	14.3	13.0	11.5	12.3	170.1	202.9	0.27
09/07	15.0	13.5	14.3	12.5	11.0	11.8	165.6	198.7	0.25
10/07	18.5	14.0	16.3	14.0	11.5	12.8	163.3	192.4	0.24
11/07	18.0	15.0	16.5	14.0	12.5	13.3	164.7	190.5	0.24
12/07	17.0	15.0	16.0	13.0	12.0	12.0	168.1	195.0	0.25
13/07	19.0	14.0	16.5	13.5	11.5	11.0	179.1	215.6	0.30
14/07	19.0	15.5	17.3	14.5	12.5	11.0	183.7	219.3	0.33
15/07	18.0	15.5	16.8	14.0	12.5	12.0	186.5	222.2	0.31
16/07	18.0	15.0	16.5	13.0	12.5	12.8	191.9	224.4	0.36
17/07	15.5	13.5	14.5	12.0	11.5	11.8	201.2	230.1	0.40
18/07	15.0	12.0	13.5	11.5	10.5	11.0	203.2	236.0	0.41
19/07	18.5	12.5	15.5	13.5	10.5	12.0	194.7	224.7	0.37
20/07	21.0	13.5	17.3	13.5	12.0	12.8	187.3	216.2	0.34
21/07	18.0	14.5	16.3	14.0	12.5	13.3	182.6	208.3	0.33
22/07	19.5	14.5	17.0	13.5	12.0	12.5	179.7	204.9	0.31
23/07	21.0	14.0	17.5	15.0	12.0	13.5	174.9	198.7	0.28
24/07	22.5	15.0	18.8	15.0	13.0	14.0	170.9	192.4	0.26
25/07	25.0	16.0	20.5	15.5	14.0	14.8	173.2	191.3	0.26
26/07	25.5	17.0	21.3	16.0	14.0	15.0	177.7	194.7	0.27
27/07	25.0	17.5	21.3	16.0	14.5	15.3	186.2	203.5	0.30
28/07	20.0	17.0	18.5	15.0	13.0	14.0	198.9	216.5	0.35
29/07	17.5	15.0	16.3	13.0	12.5	12.8	210.6	229.8	0.39
30/07	19.0	15.0	17.0	14.5	13.0	13.8	210.6	233.2	0.43
31/07	20.0	16.0	18.0	15.0	13.5	14.3	206.9	228.1	0.41
01/08	20.5	16.5	18.5	15.5	13.0	14.3	206.3	227.2	0.41
02/08	22.0	18.0	20.0	16.5	15.0	15.8	212.0	229.5	0.42
03/08	21.5	18.5	20.0	16.0	14.5	15.3	219.3	243.7	0.46
04/08	21.0	17.5	19.3	14.5	13.0	13.8	230.1	249.9	0.51
05/08	20.0	16.5	18.3	13.5	12.5	13.0	238.9	259.5	0.55
06/08	20.5	16.5	18.5	13.5	12.5	13.0	244.2	262.0	-
07/08	20.5	17.0	18.8	14.0	13.0	13.5	246.5	264.3	0.58
08/08	20.5	17.5	19.0	14.5	13.0	13.8	247.9	267.4	-
09/08	20.5	16.5	18.5	14.5	13.5	14.0	247.1	266.9	0.58
10/08	21.0	17.0	19.0	14.0	13.0	13.5	245.9	263.2	0.58
11/08	22.0	17.5	19.8	15.0	14.0	14.5	247.3	261.2	0.57
12/08	22.0	18.0	20.0	16.0	14.5	15.3	251.6	264.3	0.57
13/08	22.0	18.0	30.0	16.5	15.5	16.0	255.3	269.4	
14/08	21.0	17.5	19.3	16.0	15.0	15.5	260.4	275.4	
15/08	20.0	15.5	17.8				264.6	281.9	

*Water discharge (m³/sec) data: Water Survey of Canada Recording Stations - Chilko River near Redstone
- Chilcotin River below Big Creek wood culvert

**Staff gauge - Chilcotin River @ Hanceville Bridge (0.3 m = 1.0 ft).

APPENDIX VIII

PHYSICAL DATA, CHILKO RIVER, 1978-1979

	Water Temperature (°C)										
	Henry's Crossing (T3) - 1978			Henry's Crossing (T4) - 1979			Chilko Lake Outlet (WD3) - 1979			Water Discharge* (m^3/sec)	
Date	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	1978	1979
21/04	6.5	3.5	5.0							8.7	7.4
22/04	8.0	2.5	5.3							8.4	7.3
23/04	7.0	3.0	5.0							8.3	7.2
24/04	8.5	2.5	5.5							8.3	7.4
25/04	9.0	4.0	6.5							8.5	7.5
26/04	9.0	5.0	7.0							8.6	7.4
27.04	8.5	5.5	7.0							8.7	7.5
28/04	10.0	5.5	7.8							9.2	7.8
29/04	9.0	5.0	7.0							9.9	8.1
30/04	10.0	6.0	8.0	9.5	5.0	7.3				10.4	8.6
01/05	7.0	5.0	6.0	9.5	4.0	6.8				11.0	9.2
02/05	7.5	4.5	6.0	7.0	4.5	5.8				10.4	10.0
03/05	8.0	4.0	6.0	6.0	4.0	5.0				10.5	10.7
04/05	7.5	4.0	5.8	7.0	3.0	5.0				10.4	11.5
05/05	9.5	3.5	6.5	6.5	4.0	5.3				10.5	11.7
06/05	10.5	4.5	7.5	8.0	3.0	5.5				11.0	12.3
07/05	10.5	6.0	8.3	7.5	3.5	5.5				11.0	12.3
08/05	10.5	6.5	8.5	6.5	3.5	5.0				11.2	12.8
09/05	11.5	7.0	9.3	8.5	3.0	5.8				11.5	13.5
10/05	10.0	6.0	8.0	8.5	4.5	6.5	10.0	3.5	6.8	12.7	15.0
11/05	10.0	5.5	7.8	8.0	4.0	6.0	13.0	3.0	8.0	13.2	14.1
12/05	9.5	6.0	7.8	6.0	5.0	5.5	11.0	4.5	7.8	13.4	14.5
13/05	9.0	6.0	7.5	8.5	4.0	6.3	13.0	4.0	8.5	13.4	14.7
14/05	8.0	6.0	7.0	8.0	5.0	6.5	11.0	4.5	7.8	13.3	14.7
15/05	8.0	5.0	6.5	6.5	5.0	5.8	9.0	5.0	7.0	13.1	15.5
16/05	10.0	5.0	7.5	9.0	4.0	6.5	12.5	4.0	8.3	14.0	15.9
17/05	10.5	6.0	8.3	8.5	5.0	6.8	-	-	-	14.0	16.8
18/05	11.5	6.5	9.0	8.5	5.0	6.8	11.0	-	-	14.8	15.9
19/05	12.0	7.0	9.5	9.0	5.0	7.0	12.0	3.0	7.5	15.7	16.3
20/05	11.5	8.0	9.8	8.5	5.5	7.0	10.5	5.5	8.0	17.5	17.5
21/05	10.5	7.5	9.0	9.5	5.0	7.3	12.0	5.0	8.5	18.9	17.1
22/05	8.5	7.0	7.8	9.0	5.5	7.3	11.5	6.0	8.8	20.0	17.3
23/05	9.5	6.5	8.0	9.0	6.0	7.5	11.0	7.0	9.0	20.5	18.4
24/05	9.5	7.0	8.3	8.0	6.0	7.0	9.5	6.5	8.0	21.5	20.0
25/05	10.0	7.0	8.5	8.5	6.0	7.3	11.0	6.5	8.8	23.0	21.6
26/05	8.5	7.0	7.8	8.0	6.5	7.3	10.0	7.0	8.5	23.6	24.9
27/05	8.5	6.5	7.5	7.0	5.5	6.3	10.0	6.0	8.0	23.6	27.3
28/04	7.5	6.5	7.0	7.0	5.5	6.3	8.0	6.0	7.0	23.4	28.4
29/05	8.5	6.5	7.5	8.5	5.5	7.0	9.5	5.5	7.5	22.9	29.7
30/05	9.5	6.5	8.0	8.5	5.5	7.0	10.0	6.0	8.0	22.9	29.5
31/05	10.0	7.0	8.5	9.0	7.0	8.0	10.0	6.5	8.3	23.7	30.0
01/06	11.0	7.5	8.3	9.0	7.0	8.0	9.5	7.5	8.5	25.2	31.7
02/06	11.5	8.0	9.8	9.0	7.0	8.0	10.0	7.5	8.8	27.0	34.0
03/06	12.0	8.5	10.3	-	-	-	9.0	7.0	8.0	30.3	36.9
04/06	12.0	9.0	10.5	-	-	-	-	-	-	34.2	40.9
05/06	12.0	9.5	10.8	8.5	6.0	7.3	-	-	-	39.1	43.7
06/06	11.5	9.0	10.3	7.0	6.0	6.5	8.5	7.0	7.8	43.6	42.1
07/06	11.5	9.0	10.3	8.5	5.5	7.0	9.0	6.5	7.8	49.2	43.0
08/06	11.0	9.0	10.0	7.0	6.0	6.5	8.5	6.5	7.5	53.2	44.7
09/06	10.0	9.0	9.5	8.5	6.0	7.3	9.5	7.0	8.3	56.9	45.6

APPENDIX VIII (cont.)

	Water Temperature (°C)										
	Henry's Crossing (T3) - 1978			Henry's Crossing (T4) - 1979			Chilko Lake Outlet (WD3) - 1979			Water Discharge (m^3/sec)	
Date	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	1978	1979
10/06	11.0	9.0	10.0	9.0	6.0	7.5	10.0	7.0	8.5	59.4	46.5
11/06	11.0	9.0	10.0	9.5	6.5	8.0	10.0	7.5	8.8	61.7	47.4
12/06	10.5	9.0	9.8	8.5	6.5	7.0	9.5	7.5	8.5	62.3	48.4
13/06	11.0	9.0	10.0	7.0	5.0	6.0	9.0	7.0	8.0	64.2	48.4
14/06	10.0	8.5	9.8	8.0	6.0	7.0	9.5	7.0	8.3	64.0	47.7
15/06	11.5	9.0	10.3	8.0	6.5	7.3	9.0	7.0	8.0	64.8	47.8
16/06	11.5	9.0	10.3	8.0	6.5	7.3	9.0	7.5	8.3	65.1	46.3
17/06	12.0	9.5	10.8	9.5	6.5	8.0	9.5	7.5	8.5	66.2	45.9
18/06	12.0	9.5	10.5	8.5	7.5	8.0	10.0	8.0	9.0	67.9	47.1
19/06	11.5	9.0	10.3	8.5	7.5	8.0	9.0	8.0	8.5	70.8	47.0
20/06	12.0	9.5	10.8	10.0	7.0	8.5	10.5	7.5	9.0	70.5	48.0
21/06	12.0	10.0	11.0	9.5	7.5	8.5	10.0	8.0	9.0	73.3	49.5
22/06	11.5	10.0	10.8	9.5	7.5	8.5	10.0	8.0	9.0	74.4	49.5
23/06	12.0	10.0	11.0	9.0	7.0	8.0	10.0	8.0	9.0	77.0	49.1
24/06	12.0	10.0	11.0	10.0	7.0	8.5	10.5	8.0	9.3	79.8	48.1
25/06	12.5	10.0	11.3	11.0	8.0	9.5	11.0	8.5	9.8	81.5	47.9
26/06	12.5	10.0	11.3	11.5	8.5	9.8	11.5	9.0	10.3	83.2	49.1
27/06	12.5	10.0	11.3	11.5	8.5	10.0	11.5	9.5	10.5	84.9	50.5
28/06	13.0	10.5	11.8	11.5	9.0	10.3	11.5	10.0	10.8	88.0	52.5
29/06	13.0	11.0	12.0	11.5	9.0	10.3	12.0	10.0	11.0	91.1	55.0
30/06	13.0	11.5	12.3	10.0	9.0	9.5	11.0	9.5	10.3	94.2	56.3
01/07	13.5	11.0	12.3	11.0	8.5	9.8	11.5	9.5	10.5	96.5	57.8
02/07	13.5	11.5	12.5	10.0	8.5	9.3	10.0	9.0	9.5	99.1	59.5
03/07	14.0	12.0	13.0	10.5	8.0	9.3	11.0	8.5	9.8	100.7	57.8
04/07	14.0	12.5	13.3	10.0	8.5	9.3	10.0	9.5	9.8	102.7	56.7
05/07	14.0	12.5	13.3	11.0	8.5	9.8	11.5	9.5	10.5	105.8	56.5
06/07	15.0	13.0	14.0	11.5	8.5	10.0	12.0	9.5	10.8	107.3	57.4
07/07	16.0	13.5	14.8	11.0	9.5	10.3	11.5	9.0	10.3	112.1	58.8
08/07	15.5	14.0	14.8	11.0	9.0	10.0	11.0	10.0	10.5	115.2	60.5
09/07	14.5	14.0	14.3	11.0	9.5	10.3	11.5	10.0	10.8	118.3	60.5
10/07	14.0	13.5	14.3	11.5	10.0	10.8	11.5	10.0	10.8	120.6	63.4
11/07	13.0	12.5	12.8	11.0	9.5	10.3	11.5	10.0	10.8	121.4	64.4
12/07	14.5	12.5	13.5	10.5	9.0	9.8	12.0	10.0	11.0	122.3	64.3
13/07	14.5	13.0	13.8	10.5	9.0	9.8	11.5	10.0	10.8	124.8	63.3
14/07	14.5	13.0	13.8	11.0	9.0	10.0	11.5	10.0	10.8	125.7	63.1
15/07	15.0	13.0	14.0	12.0	9.0	10.5	11.5	10.0	10.8	126.8	63.7
16/07	14.5	13.0	13.8	12.5	10.0	11.3	12.5	11.0	11.3	128.2	64.8
17/07	14.5	13.5	14.0	13.0	10.5	11.8	13.0	11.5	12.3	130.2	66.2
18/07	14.5	13.0	13.8	13.5	11.0	12.3	13.0	12.0	12.5	130.5	69.3
19/07	14.0	12.0	13.0	14.0	11.5	12.8				129.0	72.6
20/07	14.0	12.0	13.0	14.0	12.0	13.0				128.8	77.5
21/07				14.0	11.5	12.8				128.2	81.5
22/07				13.5	11.5	12.5				128.2	84.3
23/07				13.5	12.0	12.8				127.6	84.8
24/07				12.5	11.5	12.0				125.4	85.9
25/07				11.5	9.5	10.0				125.1	87.7
26/07				13.5	10.0	11.8				128.2	88.7
27/07				14.0	12.0	13.0				131.9	90.7
										131.1	91.5

*Water discharge (m^3/sec) data: Water Survey Canada recording stations
- Chilko River - near Redstone
- Chilcotin River - below Big Creek wood culvert

APPENDIX IX

RECONNAISSANCE DATA FOR THE CHILCOTIN RIVER SYSTEM (1975-1979)

YEAR	SAMPLING SITE	METHOD (Effort)	DATE/TIME Set	DATE/TIME Hauled	CHINOOK JUVENILES * Fry	CHINOOK JUVENILES * Tagged	CHINOOK JUVENILES * Smolts	Sock	Coho	Rbow	Dvard	Wfish	Squa	Suck	Shin	Dace	Lamp	Scul
CHILKO RIVER																		
1975	Outlet of Chilko Lake	Minnow traps(5)	25/09 1700h	26/09 0900h	0								1					
	Lingfield redds	Minnow traps(3)	26/09 1500h	27/09 0900h	0					4						1		
	Side Channels, 1.6 km downstream of Henry's Crossing	Minnow traps(2)	27/09 1045h	27/09 1200h	56		2			3								
1976	Canoe Crossing	Beach seine (2 sets)	29/08 1045h	29/08 1130h	17													
	Area 1.6 km downstream of Chilko Lake to Canoe Crossing	Minnow traps(11)	29/08 1400h 1620h	29/08 1435h 1645h	0													
	Henry's Crossing	Minnow traps(7)	29/08 1535h	29/08 1930h	0					3								
1977	Area between Chilko Lake and Lingfield Creek	Minnow seine (3 hauls)	11/09 0830h	11/09 0915h	0			1										
	Lingfield spawning area	Beach seine	11/09 1250h	11/09 1300h	3			147										
	2 km downstream of Henry's Crossing	Minnow traps(10)	11/09 1515h	11/09 1645h	49		10											
	Lingfield spawning area	Minnow traps(10)	24/09 0930h	24/09 1300h	0													
	Lingfield Creek to Henry's Crossing	Minnow seine (3 hauls)	26/09 0930h	26/09 1030h	0													
	3 km downstream of Henry's Crossing	Minnow traps(10)	26/09 1000h	26/09 1330h	79													
1978	Side Channel - Henry's Crossing (east bank)	Beach seine (1 set)	27/06 1710h	27/06 1720h	27													
	Side Channel - Henry's Crossing (east bank)	Beach seine (2 sets)	28/06 2045h	28/06 2110h	23													
	Outlet of Chilko Lake	Minnow traps(12)	16/08 0900h	16/08 1330h	27	2	2											
	Canoe Crossing - upper end	Minnow traps(6)	16/08 1030h	16/08 1400h	22	4												
	Islands 2 km downstream of Henry's Crossing	Minnow traps(6)	16/08 1520h	16/08 1710h	91	12	1											
	Islands 5 km downstream of Henry's Crossing	Minnow traps(10)	16/08 1540h	16/08 1640h	92	7	39											

* Chinook 0+ totals do not include 0+ tagged juveniles

APPENDIX IX (cont.)

YEAR	SAMPLING SITE	METHOD (Effort)	DATE/TIME		CHINOOK JUVENILES *			Sock	Coho	Rbow	Dvard	Wfish	Squa	Suck	Shin	Dace	Lamp	Scul
			Set	Hauled	Fry	Tagged	Smolts											
	Lingfield spawning area	Minnow traps(2)	24/09 1250h	24/09 1530h	0													
1979	Chilko Lake narrows to outlet of Chilco Lake	Minnow traps(5)	31/07	31/07	11	37			1									
	Outlet of Chilko Lake - east bank	Minnow trap(1)	01/08	01/08	0													
	Henry's Crossing - east bank	Minnow trap(1)	01/08	01/08	16				1									
	Chilko Lake outlet	Minnow traps(4)	11/08	11/08	8	23				1								
	Chilko Lake narrows to Chesee Creek (Chilko Lake)	Minnow traps(4)	11/08	11/08	0													
	Chilko Lake - 3 km upstream along east bank	Minnow traps(2)	11/08	11/08	1	2												
	Lingfield spawning area	Minnow traps(2)	12/08	12/08	0													
	Canoe Crossing	Minnow traps(2)	12/08	13/08	1													
	Henry's Crossing	Minnow traps(2)	13/08	13/08	0													
	Chilko River - Taseko River junction	Minnow traps(2)	13/08	13/08	0				9									
	Chilko Lake outlet	Minnow traps(4)	24/08 1630h	24/08 1900h	25	34												
	Henry's Crossing	Minnow traps(4)	25/08 0900-1000h	25/08 1130-1145h	3				47									
	Chilko Lake - short distance upstream from narrows	Minnow traps(4)	25/08 1415-1430h	25/08 1600-1630h	0													
	Canoe Crossing	Minnow traps(4)	26/08 1415-1430h	26/08 1545-1555h	1	1												
	Lingfield spawning area	Minnow traps(5)	26/08 1000-1045h	26/08 1045-1145h	0		1	64		1								
	Chilko Lake outlet	Minnow traps	27/08 1445-1650h	27/08 1600-1800h	14	37												

* Chinook 0+ totals do not include 0+ tagged juveniles

APPENDIX IX (cont.)

YEAR	SAMPLING SITE	METHOD (Effort)	DATE/TIME		CHINOOK JUVENILES			Sock	Coho	Rbow	Dvard	Wfish	Squa	Suck	Shin	Dace	Lamp	Scul
			Set	Hauled	Fry	Tagged	Smolts											
	UPPER CHILCOTIN RIVER																	
1976	.7 km upstream from Redstone Bridge	Minnow traps(3)	17/08 1020h	17/08 1215h	0									1	1			
	"River Road" Bridge	Minnow traps(3)	17/08 1110h	17/08 1245h	1													
	Backwater - 1.6 km downstream from "River Road" Bridge	Minnow traps(2)	17/08 1125h	17/08 1305h	3									1	2			
	Backwater - 13 km downstream from Redstone Bridge	Minnow traps(3)	17/08 1145h	17/08 1325h	0													
	Chezacut Crossing	Minnow traps(3)	30/08 1145h	30/08 1500h	0													
	1.6-2.4 km upstream from Chezacut Crossing	Minnow traps(4)	30/08 1315h	30/08 1425h	0													
	Backwater - 13 km downstream from Redstone Bridge	Minnow traps(5)	31/08 0930h	31/08 1430h	0													
1976	Outlet of Chilcotin Lake	Minnow traps(4)	12/09 1110h	12/09 1230h	0													
	Chilcotin Lake - near outlet	Electro-shocker (90 m)	12/09 pm.	12/09 pm.	0								32	6	9			
	Downstream of "River Road" Bridge - Side Channel	Electro shocker (90 m)	23/09 am.	23/09 am.	0													
	Downstream of "River Road Bridge - Side Channel	Fyke Net	23/09 1015h	24/09 1030h	0										2		1	
1977	River Road Bridge - short distance downstream	Fyke net	06/04 2030h	06/04 2230h	0		1								1	2	11	
	Redstone Bridge area	Minnow traps(3)	21/07 1300h	21/07 1500h	1													
	Redstone Bridge area	Minnow traps(10)	15/09 1415h	15/09 1630h	1													
	Redstone Bridge area	Minnow traps(4)	27/09 1000h	27/09 1300h	0													
	Chilcotin Lake outlet	Minnow traps(4)	28/09 1200h	28/09 1440h	0											3		

YEAR	SAMPLING SITE	METHOD (Effort)	DATE/TIME Set	DATE/TIME Hauled	CHINOOK JUVENILES * Fry	CHINOOK JUVENILES * Tagged	CHINOOK JUVENILES * Smolts	Sock	Coho	Rbow	Dvard	Wfish	Squa	Suck	Shin	Dace	Lamp	Scul
CHILCOTIN RIVER																		
1976	4.8 km upstream of Alexis Creek - Side Channel	Minnow traps(4)	14/09 0900h	14/09 1310h	3					2								
	13.8 km upstream of Alexis Creek - Side Channel	Beach seine (4 sets)	24/09	24/09	10									+				
	12 km upstream of Alexis Creek - Side Channel	Beach seine (4 sets)	24/09	24/09	165			++						79	4			
	12 km upstream of Alexis Creek - Side Channel	Minnow traps(5)	25/09 0915h	25/09 1030h	6													
	Short distance upstream of Alexis Creek Bridge - Backwater	Beach seine (4 sets)	25/09	25/09	73			+		+		+		+	+			
	0.4 km upstream of Alexis Creek Bridge	Beach seine (3 sets)	27/09	27/09	100			+		+				+				
	Short distance upstream of Alexis Creek Bridge - Backwater	Electro-shocker	28/09 am.	28/09 am.	0					3								
1977	Alexis Creek Bridge - upstream	2x3 IPT	16/04 1800h	17/04 0800h	2											1	1	
	Chilko River - Chilcotin River confluence and Bull Canyon	Minnow traps(10)	27/09 1430h	27/09 1630h	5							1			11			
	Bull Canyon	Minnow traps(7)	29/09 1000h	29/09 1445h	0					1				2	2	2		
	Alexis Creek Bridge	Minnow traps(8)	29/09 1030h	29/09 1515h	1							1						
	Hanceville Bridge	Minnow traps(12)	29/09 1545h	29/09 1730h	0							1	4		1			
1978	Bull Canyon Recreational Site	Minnow traps(10)	17/08	17/08	56	1			2	5	2							
	Alexis Creek road turnoff (approx. 9 km upstream from Alexis Creek)	Minnow trap(1)	23/09 1045h	25/09 1400h	1													
1979	Alexis Creek Bridge	Minnow traps(2)	02/08	02/08	3													
	Hanceville Bridge	Minnow traps(2)	02/08	02/08	0					1								
	Bull Canyon	Minnow traps(2)	13/08	13/08	3													
	Alexis Creek Bridge	Minnow traps(2)	13/08	13/08	0													
	Hanceville Bridge	Minnow traps(2)	13/08	13/08	0													

* Chinook 0+ totals do not include 0+ tagged juveniles

APPENDIX IX (cont.)

YEAR	SAMPLING SITE	METHOD (Effort)	DATE/TIME Set	DATE/TIME Hauled	CHINOOK JUVENILES Fry	CHINOOK JUVENILES Tagged	CHINOOK JUVENILES Smolts	Sock	Coho	Rbow	Dvard	Wfish	Squa	Suck	Shin	Dace	Lamp	Scul
	Hanceville Bridge - north side, 30 m downstream	Minnow trap(1)	29/08 1045h	29/09 1200h	0													
	Hanceville Bridge - north side, 200 m downstream	Minnow trap(1)	29/08 1050h	29/08 1200h	11			1										
	Alexis Creek Bridge - south side	Minnow trap(1)	29/08 1315h	29/08 1430h	0													
	Alexis Creek Bridge - south side, 200 m downstream	Minnow trap(1)	29/08 1315h	29/08 1430h	1													
	Bull Canyon - north side, side channel - lower end	Minnow trap(1)	29/08 1245h	29/08 1405h	0													
	Bull Canyon - north side, side channel - upper end	Minnow trap	29/08 1245h	29/08 1405h	0													
ELKIN CREEK																		
1977	Elkin Lake - downstream	Minnow traps(7)	31/08 1545h	31/08 1800h	0					1					10			
	Vedan Lake to Elkin Lake	Minnow traps(7)	31/08 1845h	01/09 0950h	0								1		21			
1978	Vedan Lake to Elkin Lake	Minnow traps(2)	12/09 1700h	14/09 1000h	0										1			
	Elkin Lake - 1.5 km downstream	Minnow traps(3)	13/09 1100h	13/09 1300h	0													1
	Elkin Lake - 3 km downstream	Minnow trap(1)	13/09 1415h	13/09 1545h	0													
TASEKO RIVER																		
1977	Taseko Lake outlet - river short distance downstream	Beach seine (2 sets)	26/08 1500h	26/08 1700h	23					1		12						
	Mouth of upper Taseko River (north end of Taseko Lakes)	Minnow trap(1)	27/08 1630h	28/08 0830h	0						1							
	21.6 km upstream of mouth of upper Taseko River	Minnow traps(6)	28/08 1355h	28/08 1630h	0													
	Outlet of Taseko Lakes	Beach seine (1 set)	30/08 1350h	30/08 1400h	5							37						
1978	Outlet of Taseko Lakes	Minnow traps(2)	14/09 1130h	14/09 1500h	3					1								

APPENDIX IX (cont.)

YEAR	SAMPLING SITE	METHOD (Effort)	DATE/TIME		CHINOOK JUVENILES			Sock	Coho	Rbow	Dvard	Wfish	Squa	Suck	Shin	Dace	Lamp	Scul
			Set	Hauled	Fry	Tagged	Smolts											
LORD RIVER																		
1977	Side channel at mouth	Minnow traps(7)	28/08 1900h	29/08 0830h	0						1		1					
	Falls River Confluence	Minnow traps(7)	29/08 1200h	29/08 1420h	0													
		Beach seine (1 set)	29/08 1400h	29/08 1415h	0							66		22		1		
	Falls River Confluence - 0.5 km downstream	Beach seine (1 set)	29/08 1450h	29/08 1500h	0							6		13				
	Falls River Confluence - 1.5 km downstream	Beach seine (1 set)	29/08 1510h	29/08 1515h	0													
	Falls River Confluence - 2.0 km downstream	Beach seine (1 set)	29/08 1525h	29/08 1530h	0							6		1				
	Mouth	Beach seine (1 set)	29/08 1550h	29/08 1600h	0									1		1		
CHAUNIGAN LAKE																		
1977	Northeast shore	Beach seine (1 set)	31/08 0920h	31/08 0930h	0					2000+								

KEY

Sock - Sockeye
Coho - Coho
Rbow - Rainbow
Dvard - Dolly varden
Wfish - Whitefish
Squa - Squawfish
Suck - Sucker
Shin - Shiner
Dace - Dace
Lamp - Lamprey
Scul - Sculpin

APPENDIX X

LENGTH AND AGE OF JUVENILE CHINOOK SALMON COLLECTED DURING RECONNAISSANCE OF THE CHILCOTIN RIVER SYSTEM, 1975-1978

	Sampling Date			Nose - fork length (mm)				
River	Year	Month and day	General Area	n	$\bar{x}$	S.E.	Range	Age
Chilko River	1975	Sept 27	Islands	4	61.0	3.50	51-67	0+
				2	92.0	7.00	85-99	1+
	1976	Aug 29	Canoe Crossing	8	45.4	2.30	36-56	0+
	1977	Sept 11	Islands	13	72.4		56-93	0+
Chilcotin River	1976	Sept 24-25	Bull Canyon and Alexis Creek	52	63.5	-	45-88	0+
	1977	Apr 7	Alexis Creek	2	37.0	0.99	36-38	0+
		Sept 27	Bull Canyon	5	69.2	1.97	64-73	0+
Upper Chilcotin River	1977	Apr 6	"River Road Bridge"	1	75.0	-	-	-
		Sept 15	Redstone	1	72.0	-	-	0+
Taseko River	1977	Aug 26	Taseko Lake outlet	20	66.7	1.23	56-78	0+
		Aug 30	Taseko Lake outlet	5	73.6	3.49	64-83	0+
	1978	Sept 14	Taseko Lake outlet	2	68.0	0.99	67-69	0+

APPENDIX XI

INCLINED PLANE TRAP CATCHES, HANCEVILLE BRIDGE, CHILCOTIN RIVER, APRIL-AUGUST 1977

	CHINOOK 0+					CHINOOK 1+					RAINBOW TROUT				
DATE	4x4 No.1	4x4 No.2	2x3 No.1	2x3 No.2	Σ	4x4 No.1	4x4 No.2	2x3 No.1	2x3 No.2	Σ	4x4 No.1	4x4 No.2	2x3 No.1	2x3 No.2	Σ
28/04	316		34		350	29		0		29	0		0		0
29/04	267		52		319	nr		3		3	16		0		16
30/04	114		41		155	nr		1		1	0		0		0
01/05	116		54		170	62		4		66	0		0		0
02/05	24		10	9	43	10		1	0	11	0		0	0	0
03/05	28		22	nf	50	33		4	nf	37	0		0	nf	0
04/05	29		3	7	39	4		0	0	4	0		0	0	0
05/05	60		9	5	74	35		0	1	36	0		0	0	0
06/05	137		7	5	149	35		0	0	35	0		0	0	0
07/05	130		13	7	150	51		0	0	51	9		0	0	9
08/05	352		15	10	377	30		0	0	30	2		0	0	2
09/05	314		39	24	377	10		0	0	10	0		0	0	0
10/05	648		29	41	718	9		2	2	13	0		0	0	0
11/05	428		48	137	613	21		0	0	21	4		0	0	4
12/05	680		102	48	838	22		1	3	26	3		0	0	3
13/05	654		197	29	880	16		1	0	17	0		0	0	0
14/05	626		152	58	836	9		1	0	10	2		0	0	2
15/05	411		174	76	661	10		1	1	12	6		0	0	6
16/05	452		153	35	640	11		2	0	13	0		0	0	0
17/05	256		75	51	382	25		1	0	26	0		2	0	2
18/05	220		29	28	277	31		0	0	31	1		0	0	1
19/05	126		88	71	285	74		0	1	75	2		0	0	2
20/05	188		60	34	282	50		0	0	50	1		1	0	2
21/05	304		29	30	363	46		0	0	46	7		0	1	8
22/05	247		8	12	267	44		1	1	46	1		0	0	1
23/05	316		21	6	343	24		0	0	24	18		1	2	21
24/05	128		16	10	154	3		0	0	3	0		0	0	0
25/05	45		1	5	51	2		0	0	2	2		3	0	5
26/05	39		12	2	53	1		0	0	1	8		0	0	8
27/05	17	7	2	4	30	7	1	0	1	9	4	3	0	0	7
28/05	20	3	0	7	30	18	0	0	0	18	0	0	0	0	0
29/05	12	1	2	3	18	25	3	0	0	28	1	0	0	0	1
30/05	1	20	0	0	21	1	7	0	0	8	0	0	0	0	0
31/05	15	9	1	4	29	5	0	0	0	5	4	0	0	0	4
01/06	10	2	0	1	13	2	0	0	0	2	4	0	0	0	4
02/06	20	nf	0	1	21	2	nf	0	0	2	0	nf	0	0	0
03/06	49	nf	0	1	50	5	nf	0	0	5	12	nf	0	0	12
04/06	42	nf	0	1	43	1	nf	0	0	1	8	nf	0	0	8
05/06	24	13	0	0	37	1	1	0	0	2	1	0	0	0	1
06/06	25	nf	fd	fd	25	0	nf	fd	fd	0	1	nf	fd	fd	1
07/06	84	nf			84	2	nf			2	7	nf			7
08/06	141	27			168	7	4			11	7	4			11
09/06	309	65			374	7	2			9	7	7			14
10/06	133	273			406	2	5			7	16	20			36
11/06	262	78			340	1	0			1	15	5			20
12/06	195	71			266	1	2			3	0	0			0
13/06	223	92			315	0	0			0	4	9			13
14/06	nf	nf			nf	0	nf			nf	nf	nf			0
15/06	64	nf			64	0	nf			0	10	nf			10
16/06	72	nf			72	0	nf			0	8	nf			8
17/06	75	30			105	0	0			0	0	0			0
18/06	109	38			147	0	0			0	1	0			1
19/06	62	38			100	0	0			0	0	0			0
20/06	39	78			117	0	0			0	1	0			1
21/06	nc	nc			nc	nc	nc			nc	nc	nc			nc

APPENDIX XI (cont.)

	CHINOOK 0+					CHINOOK 1+					RAINBOW TROUT				
DATE	4x4 No.1	4x4 No.2	2x3 No.1	2x3 No.2	Σ	4x4 No.1	4x4 No.2	2x3 No.1	2x3 No.2	Σ	4x4 No.1	4x4 No.2	2x3 No.1	2x3 No.2	Σ
22/06	nc	nc			nc	nc	nc			nc	nc	nc			nc
23/06	173	91			264	0	0			0	1	0			1
24/06	nc	nc			nc	nc	nc			nc	nc	nc			nc
25/06	60	67			127	0	0			0	5	0			5
26/06	nc	nc			nc	nc	nc			nc	nc	nc			nc
27/06	nc	nc			nc	nc	nc			nc	nc	nc			0
28/06	5	6			11	0	0			0	0	0			nf
29/06	nf	nf			nf	nf	nf			nf	nf	nf			nc
30/06	nc	nc			nc	nc	nc			nc	nc	nc			nc
01/07	15	13			28	0	0			0	0	0			0
02/07	nf	nf			nf	nf	nf			nf	nf	nf			nf
03/07	nf	nf			nf	nf	nf			nf	nf	nf			nf
04/07	nf	nf			nf	nf	nf			nf	nf	nf			nf
05/07	nf	nf			nf	nf	nf			nf	nf	nf			nf
06/07	nf	nf			nf	nf	nf			nf	nf	nf			nf
07/07	nf	nf			nf	nf	nf			nf	nf	nf			nf
08/07	1	1			2	0	0			0	0	0			0
09/07	14	2			16	0	0			0	0	0			0
10/07	nf	fd			nf	nf	fd			nf	nf	fd			nf
11/07	nf				nf	nf				nf	nf				nf
12/07	nf				nf	nf				nf	nf				nf
13/07	nf				nf	nf				nf	nf				nf
14/07	nf				nf	nf				nf	nf				nf
15/07	nf				nf	nf				nf	nf				nf
16/07	nf				nf	nf				nf	nf				nf
17/07	nf				nf	nf				nf	nf				nf
18/07	2				2	0				0	4				4
19/07	nc				nc	nc				nc	nc				nc
20/07	5				5	0				0	1				1
21/07	nc				nc	nc				nc	nc				nc
22/07	nc				nc	nc				nc	nc				nc
23/07	nc				nc	nc				nc	nc				nc
24/07	nc				nc	nc				nc	nc				nc
25/07	nc				nc	nc				nc	nc				nc
26/07	nc				nc	nc				nc	nc				nc
27/07	nc				nc	nc				nc	nc				nc
28/07	nc				nc	nc				nc	nc				nc
29/07	10				10	0				0	9				9
30/07	nf				nf	nf				nf	nf				nf
31/07	nf				nf	nf				nf	nf				nf
01/08	nf				nf	nf				nf	nf				nf
02/08	nf				nf	nf				nf	nf				nf
03/08	7				7	0				0	0				0
04/08	4				2	0				0	0				0
05/08	nf				nf	nf				nf	nf				nf
06/08	nf				nf	nf				nf	nf				nf
07/08	4				4	0				0	0				0
08/08	fd				fd	fd				fd	fd				fd
Σ	9,964	1,025	1,498	762		784	25	23	10		213	48	7	3	
ΣΣ					13,249					842					271

nc - not checked
nf - not fished
nr - not recorded
fd - fishing discontinued

APPENDIX XII

SEINE CATCHES, CHILCOTIN RIVER, MAY-JULY 1977

Sampling Area	Date	Chinook 0+	Catch/ Set	Chinook 1+	Rainbow Trout	No. of Sets
Hanceville Bridge	04/05	55	55.0	14	0	1
	05/05	46	56.0	1	0	1
	06/05	25	6.3	7	0	4
	07/05	54	18.0	10	2	3
	10/05	0	0.0	0	0	4
	16/05	69	17.3	30	0	4
	19/05	119	29.8	0	0	4
	21/05	345	115.0	26	0	3
	25/05	665	59.5	21	7	11
	26/05	628	89.7	5	4	7
	28/05	393	98.3	11	1	4
	30/05	447	49.7	7	7	9
	05/06	852	170.4	0	0	5
	06/06	143	35.8	0	17	4
	18/06	380	54.3	0	0	7
	22/06	1,001	33.4	0	ne	30
	23/06	665	44.3	0	ne	15
	24/06	200	20.0	0	ne	10
Σ		6,077		132	38	
Bull Canyon	31/05	4,634	421.3	15	1	11
	01/06	848	169.6	0	0	5
	02/06	2,021	183.7	21	0	11
	03/06	3,215	160.8	10	0	20
	04/06	3,105	194.1	16	2	16
	07/06	1,533	511.0	0	0	3
	08/06	235	58.8	0	7	4
	10/06	1,492	135.6	26	0	11
	11/07	258	51.6	0	ne	5
Σ		17,341		88	14	
Alexis Creek Bridge	12/06	1,689	422.3	0	0	4
	15/06	1,074	537.0	0	ne	2
	21/06	781	156.2	0	ne	5
	22/06	173	11.5	0	ne	15
Σ		3,717		0		
Alexis Creek Bridge to Bull Canyon	14/06	485	60.6	0	ne	8
	19/06	1,038	103.8	0	0	10
	12/07	20	5.0	0	0	4
Σ		1,543		0		
Anaham Flats	05/06	13		1	0	3
ΣΣ		28,691		221	52	263

ne = not enumerated

APPENDIX XIII

MINNOW TRAP CATCHES, CHILCOTIN RIVER, MAY-AUGUST 1977

Sampling Area	Date	Chinook 0+	Catch/Trap	Chinook 1+	Rainbow Trout	No. of Traps
Hanceville Bridge	25/06	269	29.9	0	5	9
	26/06	600	60.0	0	17	10
	27/06	957	95.7	0	14	10
	28/06	802	36.5	0	0	22
	29/06	671	12.7	0	0	53
	30/06	138	2.6	0	0	53
	01/07	118	2.2	0	0	53
	02/07	794	33.1	0	0	24
	04/07	376	6.7	0	15	56
	05/07	210	9.1	0	1	23
	06/07	216	9.4	0	1	23
	07/07	1,279	26.6	0	42	48
	08/07	563	11.3	0	40	50
	09/07	1,585	18.9	0	42	84
	10/07	983	11.7	0	17	84
	11/07	299	5.2	0	0	57
	14/07	141	47.0	0	0	3
	15/07	12	4.0	0	0	3
	19/07	285	31.7	0	17	9
	20/07	139	15.4	0	9	9
	21/07	59	6.6	0	5	9
	28/07	770	9.0	0	22	86
	29/07	176	5.9	0	13	30
	30/07	496	5.8	0	50	86
	31/07	772	13.8	0	26	56
	01/08	162	2.9	0	12	56
	02/08	176	8.8	0	30	20
	03/08	104	4.2	0	11	25
	04/08	371	7.4	0	37	50
	05/08	484	13.8	0	38	35
	06/80	136	3.9	0	22	35
Σ		14,143		0	486	
Bull Canyon	31/05	28	4.7	0	0	6
	02/06	39	6.5	0	0	6
	03/06	26	4.3	0	0	6
	05/06	83	13.9	0	0	0
	09/06	72	3.6	0	0	20
	21/06	790	26.3	0	0	30
	22/06	436	8.7	0	0	50
	23/06	919	18.4	0	ne	50
	24/06	304	6.1	0	ne	50
	25/06	331	23.6	2	0	14
	26/06	1,074	25.0	0	0	43
	27/06	2,362	54.9	0	0	43
	28/06	856	19.9	0	6	43
	29/06	144	3.3	0	0	43
	11/07	1,555	22.5	0	10	69
	12/07	1,320	15.0	0	17	88
	13/07	704	10.2	0	ne	69
	20/07	753	10.2	0	20	74
	21/07	705	8.2	0	12	86
	23/07	2,011	19.1	0	71	86
	24/07	1,349	23.4	0	57	86
	25/07	1,159	15.7	0	40	86
	29/07	249	13.5	0	17	30
	06/08	98	8.3	0	0	10
	07/08	681	9.8	0	18	60
	08/08	477	11.4	0	19	60
	09/08	286	4.8	0	12	60
Σ		20,453		2	334	
Bull Canyon and Hanceville Bridge	27/07	379	4.4	0	37	86
Alexis Creek Bridge	02/07	99	3.8	0	0	26
Alexis Creek Bridge, Bull Canyon and Hanceville Bridge	03/07	1,322	23.2	0	ne	57
Bull Canyon and Hanceville Bridge	27/07	379	4.4	0	37	86
Alexis Creek Bridge	02/07	99	3.8	0	0	26
Alexis Creek Bridge, Bull Canyon and Hanceville Bridge	03/07	1,322	23.2	0	ne	57
Alexis Creek Bridge and Bull Canyon	26/07	920	10.7	0	19	86
	10/08	814	13.6	0	ne	60
	11/08	850	14.2	0	ne	60
	12/08	776	12.9	0	ne	60
Σ		3,360		0	19	
ΣΣ		39,756*		2	876	2,966

*Including tagged recaptures.

APPENDIX XIV

INCLINED PLANE TRAP CATCHES, HENRY'S CROSSING BRIDGE, CHILKO RIVER, APRIL-JUNE 1978

	CHINOOK 0+			CHINOOK 1+			RAINBOW TROUT		
DATE	4x4 No.1	2x3 No.1	Σ	4x4 No.1	2x3 No.1	Σ	4x4 No.1	2x3 No.1	Σ
21/04	46	14	60						
22/04	58	4	62						
23/04	nf	nc	nc	nf	nc		nf	nc	
24/04	nf	nc	nc	nf	nc		nf	nc	
25/04	nf	nc	nc	nf	nc		nf	nc	
26/04	nf	nc	nc	nf	nc		nf	nc	
27/04	nf	nc	nc	nf	nc		nf	nc	
28/04	nf	nc	nc	nf	nc		nf	nc	
29/04	nf	14,457	14,457						
30/04	2,115	4,325	6,440				2		2
01/05	972	2,139	3,111						
02/05	1,259	8,108	9,367						
03/05	882	3,153	4,035		1	1			
04/05	1,374	7,149	8,523						
05/05	1,398	8,198	9,596						
06/05	2,224	13,901	16,125						
07/05	2,422	14,678	17,100						
08/05	1,225	3,109	4,334					1	1
09/05	3,523	30,033	33,556				2	1	3
10/05	1,922	16,477	18,399				1	1	2
11/05	1,762	18,248	20,010		2	2	1		1
12/05	1,757	11,955	13,712						
13/05	3,034	12,895	15,929						
14/05	2,354	9,246	11,600				1		1
15/05	1,625	5,262	6,887						
16/05	1,900	7,676	9,576						
17/05	1,294	3,485	4,779				1		1
18/05	1,625	5,262	6,887				1		1
19/05	1,418	869	2,287				1	1	2
20/05	1,053	773	1,826						
21/05	768	960	1,728				4		4
22/05	730	899	1,629				3	1	4
23/05	942	646	1,588				2	1	3
24/05	2,072	1,206	3,278						
25/05	1,924	582	2,506				4		4
26/05	1,704	2,814	4,518		1	1	3	2	5
27/05	671	1,026	1,697						
28/05	582	215	797				3		3
29/05	349	467	816	1		1	2		2
30/05	440	705	1,145					1	1
31/05	532	406	938				2		2
01/06	460	275	735						
02/06	367	114	481				2		2
03/06	70	17	87						
04/06	30	2	32						
Σ	48,446	209,523		1	4		34	10	
ΣΣ			257,969			5			44

nf - not fished
nc - not checked

APPENDIX XV

INCLINED PLANE TRAP CATCHES, HENRY'S CROSSING BRIDGE, CHILKO RIVER, APRIL-MAY 1979

	CHINOOK 0+				CHINOOK 1+				RAINBOW TROUT			
Date	4 x 4 No. 1	2 x 3 No. 1	2 x 3 No. 1	Σ	4 x 4 No. 1	2 x 3 No. 1	2 x 3 No. 2	Σ	4 x 4 No. 1	2 x 3 No. 1	2 x 3 No. 2	Σ
26/04	nf	nc	nc		nf	nc	nc		nf	nc	nc	
27/04	796	598	1036	2700					1	1		2
28/04	865	133	1589	2587			1	1				
29/04	2152	2454	14326	18932								
30/04	3404	5391	18653	27448							2	2
01/05	4810	10082	450	15342	1			1	2		2	4
02/05	2859	7859	12868	23586					3		1	4
03/05	2862	5725	10625	19212	*7		6	*13	3	1	1	5
04/05	2011	6895	7222	16128	2	1	3	6	4		1	5
05/05	1685	7209	10393	19287	1		*2	*2			1	1
06/05	1097	3428	6618	11143			1	1				
07/05	1687	3395	8341	13423	*1		*2	**3			1	1
08/05	1706	3018	5834	10558								
09/05	1259	3532	7621	12412	1		2	3	3	1		4
10/05	1046	1803	3320	6169			3	3	1	1	1	3
11/05	829	476	1505	2810	1			1				
12/05	2037	4336	10397	16770	1			1	1			1
13/05	2193	7339	14950	24482	1			1		1		1
14/05	9278	21175	36390	66843	1			1				
15/05	3911	10776	23065	37752					2		1	3
16/05	3987	11542	20464	35993			2	2	2			2
17/05	3778	11273	21832	36883					5		2	7
18/05	3230	6838	12454	22522					5		1	6
19/05	3907	6321	14409	24637	1		1	2	5	1	1	7
20/05	3575	7140	15491	26206			*1	*1	3			3
21/05	2704	8013	11501	22218					7	3	5	15
22/05	5221	9228	13417	27866					9	3	10	22
23/05	2516	4697	4061	11274			1	1	10	2	5	17
24/05	2914	11984	11643	26541					9	2	2	13
25/05	2196	771	1590	4557					2	2	13	17
26/05	fd	839	fd	839	fd	1	fd	1	fd	2	fd	2
27/05		1408		1408								
Σ	80515	185678	322335		18	2	25		77	20	50	
ΣΣ				588528				45				147

nc = not checked
nf = not fished
fd = fishing discontinued

*One chinook 1+ with missing adipose fin
**Two chinook 1+ with missing adipose fin

APPENDIX XVI

DAILY CATCHES OF JUVENILE CHINOOK FRY ON THE CHILKO RIVER, 1959-1960*

Date	1959	1960
25/04		15
26/04		5
27/04	163	22
28/04	378	9
29/04	985	10
30/04	626	12
01/05	746	-
02/05	-	229
03/05	737	320
04/05	989	544
05/05	1115	517
06/05	970	427
07/05	985	410
08/05	533	-
09/05	1124	59
10/05	2932	72
11/05	4753	245
12/05	2337	274
13/05	1554	689
14/05	1167	1360
15/05	2988	-
16/05	5265	3249
17/05	3048	1969
18/05	4929	953
19/05	2167	2175
20/05	1909	3009
21/05	963	3457
22/05	748	-
23/05	-	143
24/05	-	2512
25/05	7996	1544
26/06	3307	2198
27/05	5008	2149
28/05	4236	1989
29/05	3501	-
30/05	2328	2118
31/05	-	3712
01/06	1061	3252
02/06	3255	1372
03/06	3181	2416
04/06	3389	-
05/06	2264	-
06/06	634	593
07/06	507	1019
08/06	431	104
09/06	356	107
10/06	262	39
11/06	217	304
12/06	172	-
13/06	164	24
14/06	187	478
15/06		894
16/06		182
Σ	86567	47180

* Dept. Fish. Oceans, unpubl. data

APPENDIX XVII

Diagnostic Service
Fish Health Program
Pacific Biological Station
Nanaimo, B.C.

Laboratory Report

Report No. C77-174

Date July 12/77

1. Species: Chinook
2. Wild ☑ or cultured ☐ stock
3. Date sample collected: July ? 4. No. examined: 30 5. Pond no.:
6. Age: Fry 7. Site: Chilcotin River

8. Diagnosis: Myxobacterial infection of the lower jaw

9. Recommended treatment: Furanace - 1 ppm both for 1 hr (if required)
10. History of stock:
11. % of stock affected: 12. % mortality: 13. Size of stock (nos.):
14. Water: fresh ☑ salt ☐ 15. Overt disease ☑ carriers ☐
16. Fork length: 17. Weight:
18. General observations and remarks:

Large numbers of bacteria with a morphology similar to the myxobacters were observed in stained smears prepared from scrapings of the lower jaws of these fish. Since the specimens were preserved in formalin complete identification was not possible but the most likely causative organism is Flexibacter columnaris (formerly Chendrococcus columnaris the causative agent of columnaris disease).

Gary Hoskins

Diagnostician

APPENDIX XVIII

LENGTHS, WEIGHTS, SPECIFIC GROWTH RATES (SGR) AND CONDITION FACTORS (K) OF 0+ CHINOOK SALMON SAMPLED BY REARING PEN FROM THE CHILCOTIN RIVER, 1977

		Nose-Fork Length			Weight				
Sampling Date	Rearing Pen	n	$\bar{x}$	Range	n	Average/ Fish (mg)	Fish/ Pound	K	SGR[3]
07/05	1	17	36.4	34.5-41.0	-	-	-		
18/05	1	20	37.9	34.0-52.0	50	813	558	1.49	0.37
	2	20	36.2	33.5-39.0	50	486	933	1.02	
27/05	1	50	42.7	34.0-58.0	50	1008	450	1.29	1.32
	2	50	38.1	33.0-52.0	50	699	649	1.26	0.57
	3	50	39.9	32.0-56.0	50	793	572	1.25	
	4	50	38.7	32.0-48.0	50	706	642	1.22	
06/06	1	20	43.4	34.0-52.0	50	1109	409	1.36	0.16
	2	20	40.6	35.0-45.0	50	771	588	1.15	0.58
	3	20	39.5	33.0-52.0	50	861	527	1.40	-0.09
	4	20	42.0	33.0-52.0	50	977	464	1.32	0.74
	5	20	39.7	34.0-45.0	50	798	568	1.28	
17/06	1	20	54.2	43.0-66.0	50	1814	250	1.14	2.47
	2	20	47.6	40.0-59.0	50	973	466	0.90	1.45
	3	20	48.2	39.0-56.0	50	1181	384	1.10	1.81
	4	20	47.7	37.0-60.0	50	1067	425	0.98	1.16
	5	20	51.2	43.0-65.0	50	1553	292	1.16	2.31
	6	20	48.1	38.0-63.0	50	1239	366	1.11	
25/06	1	20	51.4	41.0-63.0	50	1620	280	1.19	-0.66
	2	20	47.5	41.0-57.0	50	1400	324	1.31	-0.03
	3	20	49.9	40.0-61.0	50	1537	295	1.23	0.43
	4	20	47.6	39.0-65.0	50	1537	295	1.43	-0.02
	5	20	52.3	40.0-68.0	50	1603	283	1.12	0.27
	6	20	54.4	44.0-64.0	50	1502	302	0.93	1.54
	7	20	50.9	40.0-68.0	50	1631	278	1.24	
01/07	1	49	51.3	39.0-65.0	-		-		-0.03
	2	50	49.2	41.0-57.0	-		-		0.59
08/08	6	25	52.2	42.0-61.0	50	1472	308	1.03	-0.09
	9	25	50.3	43.0-56.0	50	1314	345	1.03	
	11	25	47.4	39.0-52.0	50	1142	397	1.07	
	T[1]	50	56.0	47.0-69.0	100	1821	249	1.04	
22/08	A	20	54.6	46.0-64.0	50	1859	244	1.14	
	B	20	51.9	45.0-58.0	50	1543	294	1.10	
	C	20	60.5	47.0-74.0	50	2534	179	1.14	
	D	20	51.4	41.0-63.0	50	1814	250	1.34	
04-05/01	T[1]	50	62.4	49.0-84.0	50	2907	156	1.20	
06-08/08	T[1]	50	60.1	48.0-83.0	50	2548	178	1.17	
09/08	S[2]	20	50.3	44.0-55.0	50	1387	327	1.09	

[1] Tagged fish

[2] Fish too small to tag; released following programme

[3] Specific growth rates apply to same pen number between sampling dates

APPENDIX XIX

LENGTH AND WEIGHT BY AGE OF JUVENILE RAINBOW TROUT SAMPLED ON THE CHILCOTIN RIVER, 1977

Sampling Date	Age	Nose-Fork Length			Weight		
		n	$\bar{x}$	SE	n	$\bar{x}$	SE
07-08/05	1+	8	63.3	2.16	-	-	-
	3+	1	177.8	-	-	-	-
24/05	1+	12	68.5	2.11	-	-	-
	2+	4	86.5	9.70	-	-	-
	4+	1	176.0	-	-	-	-
08/08	0+	2	50.0	0	2	0.1	0
	1+	4	84.0	2.10	4	5.6	0.90
	2+	59	97.9	1.51	42	10.4	0.85
	3+	7	135.1	7.07	5	25.3	3.67

APPENDIX XX

SUMMARY OF CODED WIRE TAGGING ON THE CHILCOTIN RIVER, 1977

Tagging Date	Tag Code	Total Number Tagged, Clipped	Total Number Tagged, Clipped and Released	Number Held For Tag Retention Check	Days Held	Estimated Rejection	Estimated # of Tagged Fish Released Containing CWT	Size at Release	
								Mean Nose-Fork Lenght (mm)	Mean Weight (g)
1. Chinook 0+									
July 1	02/21/17	14	14		0.5				
July 5	02/21/17	2,450	2,432	130	2	106	13,738		
July 6	02/21/17	11,451	11,398		1				
July 7	02/21/17	12,188	12,023	400	1	271	11,752	56.0	1.82
July 22	02/21/17	847	840	200	2	16	3,224	60.5	2.53
July 23	02/21/17	2,419	2,400		1				
August 4	02/21/17	2,512	4,778	153	2	94	4,684	62.4	2.91
August 5	02/21/17	2,329			1				
August 6	02/21/17	4,294	12,883	288	2	170	12,713	60.1	2.55
August 7	02/21/17	6,269			1				
August 8	02/21/17	2,486			0.5				
August 9	02/21/17	743	731				731		
August 11	02/21/17	1,338	1,329				1,322		
August 12	02/21/17	1,399	1,394				1,304		
Σ		50,739	50,222			657	49,565		
2. Chinook 1+									
May 8	02/21/16	261	261	261	1	0	261	88.3	-
May 23	02/21/16	410	406	410	2	14	392	93.2	8.90
June 6	02/21/16	147	140	147	1	0	140	98.4	-
Σ		818	807			14	793		
3. Rainbow Trout (Steelhead)									
August 8	12/01/08	394	424	424	1	0	424	98.4	41.0
August 9	12/01/08	31			0.5				
Σ		425	424						

APPENDIX XXI

SUMMARY OF CHINOOK 0+ CODED WIRE TAGGING ON THE CHILKO RIVER, 1978

Tagging Date	Tag Code	Total Number Tagged, Clipped	Total Number Tagged, Clipped and Released	Number Held For Tag Retention Check	Days Held	Estimated Rejection	Estimated # of Tagged Fish Released Containing CWT	Size at Release	
								Mean Nose-Fork Length (mm)	Mean Weight (g)
July 7	02/21/19	2,233	2,210	309	6	146	4,881		
July 8	02/21/19	1,719	1,716		5				
July 9	02/21/19	1,101	1,101		4				
July 10	02/21/19	3,988	3,988	403	3	30	3,958		
July 11	02/21/19	3,218	3,215		2	133	9,577		
July 12	02/21/19	6,589	6,495		1				
July 13	02/21/19	9,300	9,240	200	2	185	9,055		
July 14	02/21/19	12,499	12,423	503	2	49	12,374	51.4	1.36
July 15	02/21/19	11,985	11,944	733	3	81	11,863		
July 16	02/21/19	13,083	13,050	519	2	151	12,899		
July 17	02/21/19	8,682	8,672	519	3		8,639	51.3	1.39
	02/21/25	5,514	5,508				5,487		
July 18	02/21/25	15,457	15,345	548	2	196	15,149	52.8	1.65
July 19	02/21/25	8,113	8,109	500	2	49	8,060	54.3	1.80
July 20	02/21/25	18,502	18,477	500	2	148	18,329	54.2	1.98
July 21	02/21/25	14,531	28,977	507	2	89	28,888	53.3	1.87
July 22	02/21/25	12,302		488	1			52.1	1.67
July 23	02/21/25	2,261			0.5				
TOTALS		151,077	150,470			1,311	149,159		

APPENDIX XXII

SUMMARY OF CHINOOK 0+ CODED WIRE TAGGING ON THE CHILKO RIVER, 1979

Tagging Date	Tag Code	Total Number Tagged, Clipped	Total Number Tagged, Clipped and Released	Number Held For Tag Retention Check	Days Held	Estimated Rejection	Estimated # of Tagged Fish Released Containing CWT	Size at Release	
								Mean Nose-Fork Length (mm)	Mean Weight (g)
July 5	02/16/58	9,139	9,078	580	2	47	9,031	52.7	1.59
July 6	02/16/58	17,373	17,330	534	2	292	17,038	54.7	1.79
July 7	02/16/58	17,149	17,140	565	2	91	17,049	58.0	2.17
July 8	02/16/58	17,292	17,286	514	2	101	17,185	58.8	2.29
July 9	02/16/58	14,844	14,752	573	2	26	14,726	55.4	1.82
July 10	02/16/58	16,990	16,985	566	4	60	16,925	55.1	1.81
July 11	02/16/58	17,500	17,465	578	3	544	16,921	54.5	1.97
July 12	02/16/58	16,571	16,396	575	2	656	15,740	54.8	1.83
July 13	02/16/58	19,063	19,027	527	2	433	18,594	53.0	1.79
July 14	02/16/58 02/16/02	6,383 12,425	6,382 12,423 }	500	2	230 447	6,152 11,976	53.7	1.90
July 15	02/16/02	20,713	20,525	529	1	854	19,671	55.4	1.95
July 16	02/16/02 02/16/58	15,456 176	15,300 174 }	558	0.5	1,015 12	14,285 162	54.0	1.79
TOTALS		201,074	200,263			4,808	195,455		

APPENDIX XXIII

RECAPTURE OF TAGGED CHINOOK FRY BY MINNOW TRAP IN THE HANCEVILLE REARING SITE AREA, 1977

Date	Number Fry Trapped	Number Fry Recaptured*	% Total Catch
July 8	476	96	20.2
July 9	743	155	20.9
July 14	141	55	39.0
July 15	12	4	33.3
July 19	283	57	20.1
July 20	139	17	12.2
July 21	59	6	10.2
July 31	32	6	18.8
Σ	1,885	396	

*During August 4-7 an additional 613 tagged fry, that had been recaptured and penned incidentally during the capture of wild fry from July 8-August 6, were counted.

APPENDIX XXIV

ADULT CHINOOK SALMON RECONNAISSANCES OF THE CHILCOTIN RIVER SYSTEM, 1975-1980

YEAR	DATE	SECTION SURVEYED	SURVEY METHOD	CHINOOK OBSERVED		CHINOOK SAMPLED	ADIPOSE MISSING	SEX RATIO		COMMENTS
				LIVE	DEAD			M	F	
CHILKO RIVER										
1975	Sept 24	Chilko River	Helicopter	300	N.E.*					- majority of chinook were in Lingfield spawning area (Section 3) - numerous sockeye present at Chilko Lake outlet
	Sept 25	3	Foot	N.E.	50	50		6	44	**
	Sept 26	3	Boat & foot	300	27	27		5	22	**
	Sept 27	3 & 5	Foot	N.E.	22	22		4	18	- no live chinook observed in Section 5 **
	Sept 29	3	Foot	200	700					- 31 distinct rows of redds - 1000+ sockeye carcasses present
1976	Sept 23	3	Boat, foot & snorkel	200	300	68		1	67	- chinook spawning past peak - 300+ carcasses and 50 live sockeye present
	Sept 24	3	Boat & foot	N.E.	9	9			9	**
1977	Sept 11	1 - 5	Boat	400	12	12		8	3	- 1 carcass of undetermined sex - major spawning in Section 3 with some in 5 - 50-75 chinook in Section 1 - 50-75 chinook in Section 1 - 3 chinook in Section 1 - 250 chinook in Section 3 - 11 chinook in Section 5
	Sept 12	3	Visual observations from bluffs	2250	N.E.					- number counted was estimated to be 50-70% - approx. 125 redds extending the width of the river - approx. 18 fish/redd
	Sept 16	3	Foot	N.E.	34	34		17	17	**
	Sept 24	1 - 3	Boat & foot	N.E.	115			13	111	- majority of carcasses in Section 3
	Sept 26	4 - 5	Boat	18	10	10		5	5	
1978	Sept 6	3	Helicopter	2000	N.E.					
	Sept 24	3	Foot	N.E.	80	80		15	64	** - 1 carcass of undetermined sex - several dead and live sockeye present

*N.E. - chinook present but not enumerated

**Carcasses sampled were the only dead counted

APPENDIX XXIV (cont.)

YEAR	DATE	SECTION SURVEYED	SURVEY METHOD	CHINOOK OBSERVED		CHINOOK SAMPLED	ADIPOSE MISSING	SEX RATIO		COMMENTS
				LIVE	DEAD			M	F	
1979	Aug 23	3	Boat	30	0					- angling conducted for fecundity studies; no success
	Aug 24	1 & 3	Boat	Few	0					- angling conducted for fecundity studies; no success
	Aug 25	3	Visual observation from bluffs	3	0					- several dozen sockeye observed moving upstream
	Aug 26	1 & 3	Boat	Few	0					- attempt made to gillnet chinook in Section 3 and angle in Section 1; no success
	Aug 27	3 5	Boat Foot	Few 0	0 0					- no success with angling
	Sept 6	Chilko River to Lava Canyon	Helicopter	1750	30					- spawning in early stages - chinook concentrated in Section 3, with equal numbers scattered throughout Section 5 - several thousand sockeye observed, mainly at Chilko Lake outlet
	Sept 7	3	Visual observation from bluffs	0	Several					- heavy rain, poor visibility
	Sept 9	3	Foot	N.E.	14	14		7	7	- east bank
	Sept 10	3	Boat	N.E.	4	4				- angling conducted for fecundity; 4 F and 1 M captured; 3 F were completely and 1 F partially spawned out
	Sept 11	3	Boat	N.E.	3					- an 11 kg female chinook angled; had not yet spawned
	Sept 22	3	Foot	N.E.	102	55		14	41	- 1/2 of west bank covered
	Sept 23	1 3	Foot Foot	N.E. N.E.	7 150	2 43		19	34	
	Sept 24	1 3	Foot Foot	N.E. N.E.	3 109					- 1/2 of west bank covered
	Sept 26	1	Foot	N.E.	4					
	Sept 28	1 3	Foot Foot	N.E. 2	2 24	12		1	11	- west bank
	Sept 30	1 3	Foot Foot	N.E. 1	1 26	7		1	6	- west bank
	Oct 1	1 3	Boat Boat & foot	2 0	0 46	1			1	
	Oct 1-2	1	Foot	N.E.	4					
	Oct 3	3	Boat	0	10					

APPENDIX XXIV (cont.)

YEAR	DATE	SECTION SURVEYED	SURVEY METHOD	CHINOOK OBSERVED		CHINOOK SAMPLED	ADIPOSE MISSING	SEX RATIO		COMMENTS
				LIVE	DEAD			M	F	
1980	Sept 7	3	Boat		2	2		1	1	
	Sept 8	1	Boat		1	1			1	
	Sept 9	1	Helicopter	298	0					
		2	"	833	0					
		3	"	866	0					
		4	"	9	0					
		5	"	1255	1					
		6	"	7	0					
	Sept 10	1	Boat		3	3		1	2	
	Sept 11	1	Boat		1	1			1	
		1	"		2	2			2	
		3	"		11	11		3	8	
	Sept 12	3	Boat		5	5		3	2	
		4	"		2	2		2		
		4	"		6	6		3	3	
		4	"		9	9		7	2	
		5	"		3	3		2	1	
	Sept 13	5	Boat		16	16		10		
		5	"		9	9		3	6	
		5	"		13	13		6	7	
	Sept 14	5	Boat		2	2		1	1	
		1	"		11	11		6	5	
	Sept 17	1	Boat		9	9		5	4	
		2	"		14	14		6	8	
		3	"		88	88	2	28	60	
	Sept 18	3	Boat		26	26		10	14	- 2 carcasses of undetermined sex
		4	"		30	30		18	12	
		4	"		32	32		27	5	
	Sept 20	1	Boat		9	9			9	
		1	"		25	25		11	14	
		2	"		71	71		9	62	
		3	"		32	32		9	23	
	Sept 20	1	Helicopter	0	0					0 0
		1		110.5	N.E.					110 111
		1		2.5	N.E.					4 1 - the "chinook observed" values are the means of the adjacent independent estimates
		1		0	0					0 0
		2		231	N.E.					228 234
		3		714	N.E.					615 813
		3		4	N.E.					5 3
		4		4	N.E.					4 4
		4		2.5	N.E.					1 4
		4		23.5	N.E.					22 25
		5		144	N.E.					144 144
		5		368	N.E.					335 401
		5		163.5	N.E.					215 112
		6		1	N.E.					0 2

APPENDIX XXIV (cont.)

YEAR	DATE	SECTION SURVEYED	SURVEY METHOD	CHINOOK OBSERVED		CHINOOK SAMPLED	ADIPOSE MISSING	SEX RATIO		COMMENTS
				LIVE	DEAD			M	F	
1980	Sept 21	4	Boat		20	20		8	12	
		5	"		7	7		6	1	
	Sept 22	5	Boat		47	47	1	35	12	
		5	"		155	155	1	76	78	- 1 carcass of undetermined sex contained coded wire tag (21-02-16) from 1975 brood year
	Sept 23	1	Boat		12	12			12	
		1	"		14	14		4	10	
		2	"		32	32		10	22	
		3	"		62	62		8	54	
		3	"		31	31		4	27	
	Sept 24	3	Boat		149	149		14	135	
	Sept 25	2	Boat		12	12		2	10	
		3	"		62	62		5	57	
		3	"		15	15			15	
		4	"		7	7		1	6	
		4	"		3	3		2	1	
		5	"		5	5		2	3	
		5	"		17	17		11	6	
	Sept 26	1	Boat		26	3	1	1	2	- appears to be a definite fin clip
		5	"		49	3		1	2	
		5	"		47	4	2	3		- although adipose missing, appears to be fresh wound
	Sept 27	2	Boat		145	14	1	1	13	
		3	"		62	6			6	
		3	"		44	5	1	1	4	
	Sept 28	3	Boat		78	7			7	
		4	"		62	8		5	3	
	Sept 29	4	Boat		32	3		1	2	
		4	"		25	5		4	1	
		5	"		3					
		5	"		64	9	1	3	5	- 1 carcass of undetermined sex
	Oct 1	1	Boat		18	15		4	11	
		1	"		21	15		6	9	
	Oct 2	5	Boat		27	27		15	12	
		5	"		26	3		1	2	
		5	"		95					
	Oct 3	2	Boat		31	28		5	23	
		3	"		21	2			2	
		3	"		73					
	Oct 4	1	Boat		6					
		4	"		52	20		3	17	
		4	"		39					

APPENDIX XXIV (cont.)

YEAR	DATE	SECTION SURVEYED	SURVEY METHOD	CHINOOK OBSERVED		CHINOOK SAMPLED	ADIPOSE MISSING	SEX RATIO		COMMENTS
				LIVE	DEAD			M	F	
1980	Oct 4 (cont.)	4	Boat		12	1	1		1	
		5	"		10	2	2	2		although all had adipose missing, appeared to be fresh wounds
		5	"		2					
		5	"		6					
	Oct 5	1	Boat		20					
		1	"		16	15			15	
		3	"		20					
		3	"		30	2			2	
		4	"		14					
CHILCOTIN RIVER										
1976	Aug 31	River-road bridge	Foot	0	1					
	Sept 11	7	Foot	0	23	23		7	15	- carcasses in good condition - little evidence of extensive spawning - 1 carcass of undetermined sex
	Sept 12	1	Foot	0	1					- carcasses in good conditions - marginal spawning area
	Sept 13	7	Foot	23	5					- spawners observed from 1.6 km upstream of Redstone bridge to 8 km downstream - carcasses partially decomposed
		River-road bridge	Foot	0	3					
	Sept 14	8	Foot	N.E.	12					
	Sept 23	8	Foot	N.E.	9	2		1	1	
1977	July 24	1	Foot	0	0					- no evidence of early chinook run as reported by locals
	Sept 1	Redstone area (6 & 7)	Foot	0	0					- 3 sockeye observed spawning upstream of Redstone
	Sept 15	6	Boat & foot	45	15	15		8	7	- spawning throughout entire section
	Sept 27	6	Boat	0	3	1			1	
		8	"	0	0					- meandering section with many side and back channels; potentially a good rearing area
	Sept 28	1	Foot	3	3	3		3		
	Sept 29	Hanceville bridge to 0.5 km downstream	Foot	0	1					
1978	Sept 6	Chilko River confluence upstream to 70 km from Chilcotin Lake	Helicopter	600	Few					- spawning scattered, mostly from 11 km downstream to 5 km upstream from Redstone - no spawners observed above Chilcotin Lake
	Sept 15	1	Foot	0	6	6		1	5	- carcasses in fair condition - spawning appears to occur approx. 1 week later than in lower reaches of the upper Chilcotin River

APPENDIX XXIV (cont.)

YEAR	DATE	SECTION SURVEYED	SURVEY METHOD	CHINOOK OBSERVED LIVE	CHINOOK OBSERVED DEAD	CHINOOK SAMPLED	ADIPOSE MISSING	SEX RATIO M	SEX RATIO F	COMMENTS
1978	Sept 16	1 km section near bridge crossing at Chezacut	Foot	0	0					
		Section 5 km up-stream from Redstone (6)	"	0	0					
		6	"	0	5					- carcasses badly decomposed
1979	Sept 6	Chilko River confluence to Chilcotin Lake	Helicopter	1173	78					- 55% of spawning between Redstone bridge and river road bridge - 1% of spawning between river-road bridge and Chilko River confluence - remaining spawning scattered from Redstone bridge to Chilcotin Lake outlet - appeared to be near the peak of spawning
	Sept 8	8	Boat	Few	7	7				- a few live chinook observed near river-road bridge
	Sept 12	Redstone bridge to 3 km down-stream (7)	Boat	83	53	48		20	28	
		1	Foot	2	1	1				
	Sept 13	7 & 8	Boat & foot	60	38	16		11	5	
	Sept 15	7	Boat	38	81	20		6	14	
	Sept 16	River-road bridge to 300 m upstream (7)	Boat	2	3	2				
	Sept 25	7	Boat	0	43	2			1	- 1 undetermined sex
	Sept 26	7	Boat	0	8					
1980	Sept 2	6	Boat & foot		1	1		1		
	Sept 6	6	Boat & foot		1	1		1		
	Sept 9	6	Boat & foot		36	36	2	17	19	
		1	Helicopter	16	1					
		2	"	160	5					
		3	"	128	11					
		4	"	9	5					
		5	"	128	6					
		6	"	161	26					
		7	"	318	53					
		8	"	9	6					
	Sept 10	7	Boat & foot		73	73		34	39	
	Sept 11	7	Boat & foot		29	29	1	11	18	

APPENDIX XXIV (cont.)

YEAR	DATE	SECTION SURVEYED	SURVEY METHOD	CHINOOK OBSERVED		CHINOOK SAMPLED	ADIPOSE MISSING	SEX RATIO		COMMENTS
				LIVE	DEAD			M	F	
1980	Sept 12	7	Boat & foot		23	28		9	19	
	Sept 17	6	Boat & foot		48	48		16	32	
	Sept 18	7	Boat & foot		26	26		7	19	
	Sept 20	1	Helicopter		0	3				
		2	"		0	5				
		3	"		0	17				
		4	"		0	3				
		5	"		0	10				
		6	"		0	9				
		7	"		0	9				
		8	"		0	0				
TASEKO RIVER										
1975	Sept 24	Taseko River	Helicopter	0	50	17		1	16	- visibility poor due to glacialflour - carcasses sighted in first 6.4 km section downstream from Taseko Lake
1976		NO SURVEYS								
1977	Aug 26	Taseko Lake outlet to 18 km (by road) downstream	Boat & foot	10	0					- visibility poor and only fish breaking surface observed - most fish observed in the first 1 km downstream from Taseko Lake
	Aug 27	1	Foot	8	0					- 2 sockeye carcasses observed
	Aug 28	Mouth of upper Taseko River (at head of Taseko Lake) to 2 km upstream	Foot	0	0					- spawning potential moderate 1.5 km upstream, where extensive deadfalls and blocked channels occur for 300-400 m
		Points 21.6 and 26.7 km (by road) from the mouth of upper Taseko R., & several hundred yards up- and downstream of these points	Foot	0	0					- some potential spawning area present although no evidence of adult or juvenile chinook
	Sept 13	1	Foot	6	20	20		13	7	- chinook spawning limited to a 0.5 km section immediately downstream from Taseko Lake - 2 sockeye carcasses observed
1978	Sept 6	Taseko Lake outlet to 6 km downstream	Helicopter	Several	Few					- several sockeye carcasses observed - chinook spawning concentrated immediately below Taseko Lake outlet
	Sept 14	1	Foot	3	27	10			10	- appeared that only a small number of chinook still spawning

APPENDIX XXIV (cont.)

YEAR	DATE	SECTION SURVEYED	SURVEY METHOD	CHINOOK OBSERVED		CHINOOK SAMPLED	ADIPOSE MISSING	SEX RATIO		COMMENTS
				LIVE	DEAD			M	F	
1979	Sept 6	Taseko Lake outlet to 6 km downstream	Helicopter	6	1					- visibility poor due to glacial flour - fish actively spawning in Section 1
	Sept 18	1	Foot	3	15	13		3	9	- 1 undetermined sex
1980	Sept 9	Taseko Lake outlet to Davidson's bridge	Helicopter	8	3					- visibility poor due to glacial flows
	Sept 15	1	Foot		24	24		4	20	
	Sept 20	Taseko Lake outlet to Davidson's bridge	Helicopter	0	107					
ELKIN CREEK										
1975	Sept 24	Taseko River confluence to 5 km upstream	Helicopter	0	5					- carcasses observed in upper reaches surveyed
1976	Aug 27	Bridge 3 km downstream from Elkin Lake outlet	Foot	0	0					- stream fast flowing at bridge crossing; well consolidated channel
1977	Aug 31	1	Foot	0	0					
		3	"	0	0					- redds from previous years evident
	Sept 12	3, 4	Foot	31	21	21		13	8	
	Sept 14	Elkin Creek	Foot	80	29	8		6	2	- spawning concentrated in 3
1978	Sept 6	Elkin Creek (6 km upstream of Vedan Lake to Taseko confluence)	Helicopter	250	Few					- spawning concentrated in Sections 1, 2, 3
	Sept 13	1	Foot	68	0					- often less than 10-12 cm of water covering redds
		3	"	66	34	10		7	3	
1979	Aug 28	1	Foot	0	0					
	Sept 6	1 & Elkin Lk	Helicopter	0	0					- beaver dam at outlet of Elkin Lake blocking upstream passage
		3	"	22	0					
		1 km downstream to 6 km downstream of Elkin Lake outlet	"	131	1					- spawning just beginning
	Sept 19	3	Foot	0	0					
		Elkin Lake outlet to meandering section 6 km downstream	"	17	22	17		5	12	

APPENDIX XXIV (cont.)

YEAR	DATE	SECTION SURVEYED	SURVEY METHOD	CHINOOK OBSERVED		CHINOOK SAMPLED	ADIPOSE MISSING	SEX RATIO		COMMENTS
				LIVE	DEAD			M	F	
1980	Aug 31	2	Foot		1	1		1		
	Sept 5	3	Foot		1	1		1		
		4	"		1	1			1	
	Sept 9	1	Helicopter	0	0					
		2	"	37	0					
		3	"	77	2					
		4	"	73	6					
		5	"	7	2					
	Sept 13	2	Foot		9	9		4	5	
	Sept 14	3	Foot		13	13		3	10	
		4	"		42	42		21	21	
	Sept 20	1	Helicopter	0	0					
		2	"	0	0					
		3	"	0	4					
		4	"	3	10					
		5	"	0	0					
CHILANKO RIVER										
1976	Aug 31	Near confluence with upper Chilcotin River	Foot	5	0					- redds observed near mouth
1977	Sept 28	Chilanko Forks area	Foot	0	0					- stream very shallow
1979	Sept 12	Confluence with upper Chilcotin River	Foot	0	0					
LORD RIVER										
1977	Aug 29	Mouth of Lord R. upstream 3 km to lake	Boat	0	0					- visibility of approx. 4 cm due to heavy glacial flour
FALLS CREEK										
1977	Aug 29	Mouth to steep escarpment a short distance upstream	Foot	0	0					

APPENDIX XXIV (cont.)

YEAR	DATE	SECTION SURVEYED	SURVEY METHOD	CHINOOK OBSERVED LIVE	CHINOOK OBSERVED DEAD	CHINOOK SAMPLED	ADIPOSE MISSING	SEX RATIO M	SEX RATIO F	COMMENTS
BIDWELL CREEK										
1977	Sept 25	River-road to mouth	Foot	0	0					- creek bed dry near road, several hundred metres downstream water flow starts - creek is impassable to fish at the mouth
BRITANNY CREEK										
1978	Sept 6	Mouth to 3 km upstream	Helicopter	0	0					- a small meandering stream flowing through marsh meadows

APPENDIX XXV

SUMMARY OF THE CHINOOK CARCASSES EXAMINED DURING SPAWNING GROUND SURVEYS ON THE CHILCOTIN RIVER SYSTEM FROM 1975 TO 1980

The data are tabulated in the following format:

SAMPLE DATE LENGTH SEX AGE COLOUR % SPAWNED

SAMPLE - number assigned to the sample in the order in which it was found in the scale books.

DATE - day.month form (31.09 for the 31st of September).

LENGTH - in centimetres.

SEX - M=male, F=female and U=unknown.

AGE - lacking subscripts is equivalent to 2_1, 3_1, 3_2, 4_1, 4_2, 5_1, 5_2, 6_1 and 6_2; -1 is input if no age is read due to no sample or if the scale is resorbed; 0 is input if the scale sample is regenerate.

FLESH COLOUR - W for white, R for red, P for pink and B for no colour recorded.

% SPAWNED - an estimate of the number of eggs spawned between 0.0 and 100.0 percent. A -1.0 is input if the fish is a male or if no spawning information has been taken for the female. A -2.0 is entered if the male fish has been CWT marked, and the negative sign is entered in front of the % spawn of the female if it also has been CWT marked.

MARKED FISH - Chinook lacking adipose fins in 1980 sample are indicated by a rectangular box around the data.

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CHILKO RIVER 1975   99 ADULT CHINOOK


SAMPLE DATE  LENGTH SEX AGE COLOR %SPAWN

     1 25.09    71.0    F     41    W        -1.0      51 26.09     71.5     F      41     W        -1.0
     2 25.09    68.7    F     41    W        -1.0      52 26.09     70.0     F      41     P        -1.0
     3 25.09    71.4    F     41    W        -1.0      53 26.09     69.8     F      41     W        -1.0
     4 25.09    71.9    F     41    W        -1.0      54 26.09     52.3     M      31     W        -1.0
     5 25.09    71.7    F     41    W        -1.0      55 26.09     70.0     M      41     P        -1.0
     6 25.09    59.1    M     31    W        -1.0      56 26.09     69.0     F      41     W        -1.0
     7 25.09    74.0    F     41    W        -1.0      57 26.09     73.0     F      41     W        -1.0
     8 25.09    67.9    F     31    W        -1.0      58 26.09     55.8     F      41     W        -1.0
     9 25.09    70.0    F     41    W        -1.0      59 26.09     69.0     F      41     W        -1.0
    10 25.09    56.9    M     31    W        -1.0      60 26.09     67.5     F      41     W        -1.0
    11 25.09    73.2    F     41    W        -1.0      61 26.09     71.0     F      41     W        -1.0
    12 25.09    70.4    F     41    W        -1.0      62 26.09     69.1     F      31     W        -1.0
    13 25.09    69.4    F     41    P        -1.0      63 26.09     61.2     F      41     W        -1.0
    14 25.09    78.0    F     41    P        -1.0      64 26.09     80.0     M      51     W        -1.0
    15 25.09    77.3    F     52    W        -1.0      65 26.09     69.1     F      41     W        -1.0
    16 25.09    69.1    F     41    W        -1.0      66 26.09     65.0     F      41     W        -1.0
    17 25.09    65.4    F     41    W        -1.0      67 26.09     73.6     F      41     W        -1.0
    18 25.09    78.9    F     41    W        -1.0      68 26.09     67.0     F      41     P        -1.0
    19 25.09    70.7    F     41    P        -1.0      69 26.09     72.7     F      41     P        -1.0
    20 25.09    74.0    F     41    W        -1.0      70 26.09     72.7     F      41     W        -1.0
    21 25.09    72.5    F     41    W        -1.0      71 26.09     67.0     F      41     W        -1.0
    22 25.09    73.5    F     41    P        -1.0      72 26.09     65.9     F      41     W        -1.0
    23 25.09    71.5    M     41    R        -1.0      73 26.09     70.5     F      41     W        -1.0
    24 25.09    68.2    F     41    P        -1.0      74 26.09     54.0     M      31     W        -1.0
    25 25.09    67.1    F     31    W        -1.0      75 26.09     64.0     M      41     B        -1.0
    26 25.09    69.3    F     41    P        -1.0      76 26.09     68.2     F      41     W        -1.0
    27 25.09    79.8    M     41    W        -1.0      77 26.09     69.0     F      41     W        -1.0
    28 25.09    72.6    F     41    W        -1.0      78 27.09     68.9     F      41     W        -1.0
    29 25.09    68.5    F     41    P        -1.0      79 27.09     68.8     F      41     R        -1.0
    30 25.09    69.0    F     -1    W        -1.0      80 27.09     67.5     F      41     W        -1.0
    31 25.09    74.5    F     31    P        -1.0      81 27.09     69.6     F      41     W        -1.0
    32 25.09    71.0    F     41    W        -1.0      82 27.09     73.5     F      41     W        -1.0
    33 25.09    70.0    F     41    P        -1.0      83 27.09     70.4     F      41     W        -1.0
    34 25.09    71.0    F      0    P        -1.0      84 27.09     76.0     M      41     W        -1.0
    35 25.09    76.0    M     41    W        -1.0      85 27.09     69.9     F      41     R        -1.0
    36 25.09    71.5    F     41    P        -1.0      86 27.09     56.0     M      31     R        -1.0
    37 25.09    74.3    F     62    P        -1.0      87 27.09     66.2     F      41     W        -1.0
    38 25.09    68.7    F     41    W        -1.0      88 27.09     66.6     F      41     W        -1.0
    39 25.09    66.6    F     41    W        -1.0      89 27.09     62.0     F      31     W        -1.0
    40 25.09    69.7    F      0    W        -1.0      90 27.09     71.4     F      41     P        -1.0
    41 25.00    67.7    F     31    W        -1.0      91 27.09     42.1     M      31     W        -1.0
    42 25.09    69.9    F     41    W        -1.0      92 27.09     70.5     M      41     W        -1.0
    43 25.30    69.8    F     41    W        -1.0      93 27.09     72.0     F      41     W        -1.0
    44 25.09    68.2    F     31    W        -1.0      94 27.09     68.6     F      41     P        -1.0
    45 25.09    68.2    F     42    W        -1.0      95 27.09     68.5     F      41     W        -1.0
    46 25.09    71.0    F     41    W        -1.0      96 27.09     68.5     F      41     P        -1.0
    47 25.09    68.8    F     31    W        -1.0      97 27.09     70.0     F       0     W        -1.0
    48 25.09    54.0    M     31    W        -1.0      98 27.09     71.0     F      41     P        -1.0
    49 25.09    65.9    F     41    W        -1.0      99 27.09     73.5     F      31     P        -1.0
    50 25.09    66.6    F     31    W        -1.0
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CHILKO RIVER 1976 77 ADULT CHINOOK

SAMPLE	DATE	LENGTH	SEX	AGE	COLOR	%SPAWN
1	23.09	72.6	F	41	B	-1.0
2	23.09	68.6	F	42	B	-1.0
3	23.09	71.1	F	41	B	-1.0
4	23.09	72.2	F	41	B	-1.0
5	23.09	73.8	F	41	B	-1.0
6	23.09	60.4	F	31	B	-1.0
7	23.09	68.0	F	41	B	-1.0
8	23.09	68.8	F	41	B	-1.0
9	23.09	54.6	F	31	B	-1.0
10	23.09	70.7	F	41	B	-1.0
11	23.09	71.1	F	41	B	-1.0
12	23.09	66.5	F	41	B	-1.0
13	23.09	74.9	F	41	B	-1.0
14	23.09	75.9	F	41	B	-1.0
15	23.09	73.9	F	41	B	-1.0
16	23.09	71.0	F	41	B	-1.0
17	23.09	61.7	F	42	B	-1.0
18	23.09	70.5	F	41	B	-1.0
19	23.09	70.0	F	41	B	-1.0
20	23.09	67.0	F	41	B	-1.0
21	23.09	64.5	F	41	B	-1.0
22	23.09	64.5	F	41	B	-1.0
23	23.09	70.5	F	41	B	-1.0
24	23.09	70.4	F	41	B	-1.0
25	23.09	69.7	F	41	B	-1.0
26	23.09	67.9	F	0	B	-1.0
27	23.09	71.1	F	41	B	-1.0
28	23.09	71.1	F	41	B	-1.0
29	23.09	75.4	F	41	B	-1.0
30	23.09	55.2	F	41	B	-1.0
31	23.09	74.0	F	0	B	-1.0
32	23.09	65.9	F	41	B	-1.0
33	23.09	71.5	F	41	B	-1.0
34	23.09	76.0	F	41	B	-1.0
35	23.09	66.0	F	31	B	-1.0
36	23.09	69.5	F	42	B	-1.0
37	23.09	72.3	F	41	B	-1.0
38	23.09	72.9	F	41	B	-1.0
39	23.09	58.5	F	31	B	-1.0
40	23.09	74.0	F	41	B	-1.0
41	23.09	72.5	F	41	B	-1.0
42	23.09	71.7	F	42	B	-1.0
43	23.09	78.6	M	41	B	-1.0
44	23.09	67.7	F	42	B	-1.0
45	23.09	67.9	F	0	B	-1.0
46	23.09	78.0	F	41	B	-1.0
47	23.09	73.0	F	41	B	-1.0
48	23.09	71.1	F	41	B	-1.0
49	23.09	69.1	F	41	B	-1.0
50	23.09	72.9	F	41	B	-1.0
51	23.09	71.3	F	41	B	-1.0
52	23.09	75.5	F	52	B	-1.0
53	23.09	75.0	F	52	B	-1.0
54	23.09	69.7	F	41	B	-1.0
55	23.09	69.7	F	41	B	-1.0
56	23.09	70.8	F	41	B	-1.0
57	23.09	72.4	F	41	B	-1.0
58	23.09	67.1	F	41	B	-1.0
59	23.09	66.0	F	41	B	-1.0
60	23.09	67.7	F	41	B	-1.0
61	23.09	70.1	F	31	B	-1.0
62	23.09	62.5	F	42	B	-1.0
63	23.09	69.1	F	41	B	-1.0
64	23.09	62.0	F	31	B	-1.0
65	23.09	58.8	F	42	B	-1.0
66	23.09	73.1	F	41	B	-1.0
67	23.09	72.1	F	41	B	-1.0
68	23.09	73.0	F	41	B	-1.0
69	24.09	74.0	F	41	B	-1.0
70	24.09	71.0	F	41	B	-1.0
71	24.09	69.7	F	41	B	-1.0
72	24.09	69.2	F	41	B	-1.0
73	24.09	73.0	F	41	B	-1.0
74	24.09	77.2	F	51	B	-1.0
75	24.09	75.6	F	41	B	-1.0
76	24.09	61.0	F	31	B	-1.0
77	24.09	70.9	F	41	B	-1.0

CHILKO RIVER 1977 171 ADULT CHINOOK

SAMPLE	DATE	LENGTH	SEX	AGE	COLOR	%SPAWN
1	11.09	80.0	M	41	W	-1.0
2	11.09	76.1	F	0	W	-1.0
3	11.09	70.5	M	41	W	-1.0
4	11.09	72.0	M	0	W	-1.0
5	11.09	74.0	M	41	W	-1.0
6	11.09	61.0	F	31	W	-1.0
7	11.09	79.3	M	41	W	-1.0
8	11.09	83.7	M	0	W	-1.0
9	11.09	75.0	F	41	W	-1.0
10	11.09	0.0	U	52	B	-1.0
11	11.09	85.0	M	41	W	-1.0
12	11.09	66.0	M	52	W	-1.0
13	16.09	70.5	F	31	W	-1.0
14	16.09	67.3	F	42	W	-1.0
15	16.09	75.1	F	41	W	-1.0
16	16.09	53.5	M	31	W	-1.0
17	16.09	75.0	F	52	W	-1.0
18	16.09	82.3	M	52	W	-1.0
19	16.09	42.2	M	31	W	-1.0
20	16.09	72.3	M	0	W	-1.0
21	16.09	42.3	M	31	W	-1.0
22	16.09	72.7	F	41	W	-1.0
23	16.09	78.0	F	0	W	-1.0
24	16.09	69.2	F	41	W	-1.0
25	16.09	75.0	M	41	W	-1.0
26	16.09	77.5	M	41	W	-1.0
27	16.09	53.5	M	31	W	-1.0
28	16.09	71.7	F	41	W	-1.0
29	16.09	51.0	M	31	W	-1.0
30	16.09	73.8	F	52	W	-1.0
31	16.09	83.6	M	52	W	-1.0
32	16.09	80.3	M	0	W	-1.0
33	16.09	53.2	M	31	W	-1.0

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 34 16.09    68.6   F   41   W        -1.0     104 24.09    77.6   F   41   W        -1.0
 35 16.09    73.3   F    0   W        -1.0     105 24.09    71.8   F   41   W        -1.0
 36 16.09    77.9   M   52   W        -1.0     106 24.09    72.8   F   41   W        -1.0
 37 16.09    49.1   F   31   W        -1.0     107 24.09    71.7   F    0   W        -1.0
 38 16.09    75.1   F   52   W        -1.0     108 24.09    67.9   F   41   W        -1.0
 39 16.09    71.2   M   41   W        -1.0     109 24.09    71.9   F   41   W        -1.0
 40 16.09    55.0   M   31   W        -1.0     110 24.09    76.8   F   52   W        -1.0
 41 16.09    63.5   M   52   W        -1.0     111 24.09    69.6   F   41   W        -1.0
 42 16.09    77.4   F   41   W        -1.0     112 24.09    71.5   F   41   W        -1.0
 43 16.09    74.0   F   52   W        -1.0     113 24.09    67.1   F   41   W        -1.0
 44 16.09    49.5   F   31   W        -1.0     114 24.09    73.0   M   41   W        -1.0
 45 16.09    77.5   M   41   W        -1.0     115 24.09    71.0   M   41   W        -1.0
 46 16.09    70.6   F   41   W        -1.0     116 24.09    71.7   F   41   W        -1.0
 47 24.09    72.5   F   52   W        -1.0     117 24.09    74.3   M    0   W        -1.0
 48 24.09    76.0   F   41   W        -1.0     118 24.09    65.5   F    0   W        -1.0
 49 24.09    70.6   F   41   W        -1.0     119 24.09    72.0   F   52   W        -1.0
 50 24.09    62.1   F   31   P        -1.0     120 24.09    69.7   F   41   W        -1.0
 51 24.09    73.3   F   41   W        -1.0     121 24.09    70.1   F   41   W        -1.0
 52 24.09    71.2   F   41   W        -1.0     122 24.09    65.0   F   41   W        -1.0
 53 24.09    78.2   F   51   W        -1.0     123 24.09    76.6   M   52   W        -1.0
 54 24.09    71.6   F   41   W        -1.0     124 24.09    73.0   F   41   W        -1.0
 55 24.09    76.6   F    0   W        -1.0     125 24.09    69.0   F   41   W        -1.0
 56 24.09    77.6   M   41   W        -1.0     126 24.09    67.7   F   41   W        -1.0
 57 24.09    67.9   F   41   W        -1.0     127 24.09    76.9   M   41   W        -1.0
 58 24.09    69.1   F    0   P        -1.0     128 24.09    75.4   M   41   W        -1.0
 59 24.09    71.0   F   41   W        -1.0     129 24.09    72.3   F   41   W        -1.0
 60 24.09    71.3   F   41   W        -1.0     130 24.09    74.9   F   52   W        -1.0
 61 24.09    74.7   F   41   W        -1.0     131 24.09    76.6   F    0   W        -1.0
 62 24.09    61.0   M   31   W        -1.0     132 24.09    72.4   F   41   W        -1.0
 63 24.09    71.0   F   41   W        -1.0     133 24.09    78.4   F   41   W        -1.0
 64 24.09    70.1   F    0   W        -1.0     134 24.09    70.4   F   41   W        -1.0
 65 24.09    86.0   M   51   W        -1.0     135 24.09    70.9   F   41   W        -1.0
 66 24.09    70.6   F   41   W        -1.0     136 24.09    74.6   F   41   W        -1.0
 67 24.09    74.9   F   41   W        -1.0     137 24.09    70.8   F   41   W        -1.0
 68 24.09    45.5   M   31   W        -1.0     138 24.09    70.8   F   41   W        -1.0
 69 24.09    55.4   F   31   W        -1.0     139 24.09    67.7   F   41   W        -1.0
 70 24.09    66.6   F   41   W        -1.0     140 24.09    59.5   F   31   W        -1.0
 71 24.09    72.0   F   51   W        -1.0     141 24.09    60.6   F   41   W        -1.0
 72 24.09    77.6   F   41   W        -1.0     142 24.09    71.2   F   41   W        -1.0
 73 24.09    58.3   F   42   W        -1.0     143 24.09    76.7   F   41   W        -1.0
 74 24.09    73.8   F   41   W        -1.0     144 24.09    59.0   F   31   W        -1.0
 75 24.09    66.6   F   41   W        -1.0     145 24.09    66.6   F   41   W        -1.0
 76 24.09    74.2   F   41   W        -1.0     146 24.09    77.8   F    0   W        -1.0
 77 24.09    65.7   F    0   W        -1.0     147 24.09    72.8   F   41   W        -1.0
 78 24.09    73.4   F   41   W        -1.0     148 24.09    70.8   F   52   W        -1.0
 79 24.09    84.4   F   51   W        -1.0     149 24.09    56.5   F   41   W        -1.0
 80 24.09    73.5   F   41   W        -1.0     150 24.09    73.4   F   41   W        -1.0
 81 24.09    74.9   F   41   W        -1.0     151 24.09    75.4   F   41   W        -1.0
 82 24.09    80.7   M   52   W        -1.0     152 24.09    76.1   F   51   W        -1.0
 83 24.09    72.9   F   41   W        -1.0     153 24.09    66.4   F   31   W        -1.0
 84 24.09    69.0   F   41   W        -1.0     154 24.09    70.9   F   41   W        -1.0
 85 24.09    76.2   F   52   P        -1.0     155 24.09    70.2   F    0   W        -1.0
 86 24.09    74.1   F   52   W        -1.0     156 24.09    71.3   F   41   W        -1.0
 87 24.09    85.9   M   51   W        -1.0     157 24.09    72.6   F   41   W        -1.0
 88 24.09    66.0   F   41   W        -1.0     158 24.09    75.6   F   41   W        -1.0
 89 24.09    55.7   F   41   W        -1.0     159 24.09    76.1   F   51   W        -1.0
 90 24.09    77.5   F   41   W        -1.0     160 24.09    73.9   F   41   W        -1.0
 91 24.09    78.8   F   51   W        -1.0     161 24.09    51.5   M    0   W        -1.0
 92 24.09    61.5   F   31   W        -1.0     162 26.09    79.5   M   41   W        -1.0
 93 24.09    66.8   F   41   W        -1.0     163 26.09    69.4   F   41   W        -1.0
 94 24.09    74.3   F   52   W        -1.0     164 26.09    70.0   M   41   W        -1.0
 95 24.09    71.0   F   41   W        -1.0     165 26.09    46.5   M   31   W        -1.0
 96 24.09    72.5   F   41   W        -1.0     166 26.09    74.4   M   41   W        -1.0
 97 24.09    74.7   F   52   W        -1.0     167 26.09    69.6   M   41   W        -1.0
 98 24.09    71.7   F   41   W        -1.0     168 26.09    77.3   F   41   W        -1.0
 99 24.09    72.9   F   52   W        -1.0     169 26.09    72.3   F   41   W        -1.0
100 24.09    64.2   F   41   W        -1.0     170 26.09    75.3   F   41   W        -1.0
101 24.09    74.4   F   41   W        -1.0     171 26.09    72.1   F   41   W        -1.0
102 24.09    69.7   F   41   W        -1.0
103 24.09    76.4   F   41   W        -1.0
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CHILKO RIVER 1978 80 ADULT CHINOOK

SAMPLE	DATE	LENGTH	SEX	AGE	COLOR	%SPAWN							
1	24.09	71.0	F	41	W	-1.0	41	24.09	74.4	F	41	W	-1.0
2	24.09	67.7	M	31	W	-1.0	42	24.09	68.3	F	52	W	-1.0
3	24.09	65.8	F	31	W	-1.0	43	24.09	71.5	F	41	W	-1.0
4	24.09	78.8	F	51	W	-1.0	44	24.09	51.4	M	31	W	-1.0
5	24.09	75.5	F	0	W	-1.0	45	24.09	79.7	M	41	W	-1.0
6	24.09	73.0	F	41	W	-1.0	46	24.09	71.7	F	41	W	-1.0
7	24.09	70.7	F	41	W	-1.0	47	24.09	70.7	F	41	W	-1.0
8	24.09	68.1	F	41	W	-1.0	48	24.09	68.2	F	41	W	-1.0
9	24.09	70.4	F	41	W	-1.0	49	24.09	75.6	F	41	W	-1.0
10	24.09	74.0	F	41	W	-1.0	50	24.09	68.3	F	41	W	-1.0
11	24.09	75.0	M	0	W	-1.0	51	24.09	72.4	F	0	W	-1.0
12	24.09	67.8	F	41	W	-1.0	52	24.09	72.7	M	0	W	-1.0
13	24.09	66.4	M	31	W	-1.0	53	24.09	71.4	M	42	W	-1.0
14	24.09	70.8	F	41	W	-1.0	54	24.09	75.3	F	41	W	-1.0
15	24.09	76.9	F	41	W	-1.0	55	24.09	70.1	F	41	W	-1.0
16	24.09	69.2	F	41	W	-1.0	56	24.09	74.4	F	41	W	-1.0
17	24.09	70.2	M	41	W	-1.0	57	24.09	64.0	F	41	W	-1.0
18	24.09	60.0	F	31	W	-1.0	58	24.09	68.3	F	41	W	-1.0
19	24.09	64.9	F	41	W	-1.0	59	24.09	65.1	F	41	W	-1.0
20	24.09	68.7	F	41	W	-1.0	60	24.09	72.5	F	0	W	-1.0
21	24.09	0.0	U	-1	B	-1.0	61	24.09	73.5	M	41	W	-1.0
22	24.09	73.0	F	41	W	-1.0	62	24.09	75.4	F	41	W	-1.0
23	24.09	73.9	M	51	W	-1.0	63	24.09	71.1	F	41	W	-1.0
24	24.09	74.0	F	41	W	-1.0	64	24.09	70.0	F	41	W	-1.0
25	24.09	72.4	F	0	W	-1.0	65	24.09	68.9	F	41	W	-1.0
26	24.09	80.6	M	52	W	-1.0	66	24.09	70.6	F	0	W	-1.0
27	24.09	73.9	F	52	W	-1.0	67	24.09	69.4	F	41	W	-1.0
28	24.09	75.0	F	0	W	-1.0	68	24.09	72.7	F	0	W	-1.0
29	24.09	69.4	F	41	W	-1.0	69	24.09	72.6	F	41	W	-1.0
30	24.09	73.9	F	41	W	-1.0	70	24.09	75.6	F	41	W	-1.0
31	24.09	65.4	F	41	W	-1.0	71	24.09	71.0	F	41	W	-1.0
32	24.09	78.3	M	41	W	-1.0	72	24.09	70.3	F	41	W	-1.0
33	24.09	71.8	F	0	W	-1.0	73	24.09	68.9	F	41	W	-1.0
34	24.09	76.6	F	0	W	-1.0	74	24.09	72.9	F	41	W	-1.0
35	24.09	69.4	F	41	W	-1.0	75	24.09	70.5	F	41	W	-1.0
36	24.09	75.6	F	41	W	-1.0	76	24.09	57.0	M	-1	W	-1.0
37	24.09	62.0	F	31	W	-1.0	77	24.09	74.9	F	0	W	-1.0
38	24.09	80.4	M	41	W	-1.0	78	24.09	72.5	F	41	W	-1.0
39	24.09	71.5	F	0	W	-1.0	79	24.09	77.0	M	41	W	-1.0
40	24.09	67.1	F	0	W	-1.0	80	24.09	73.2	F	41	W	-1.0

CHILKO RIVER 1979   ADULT CHINOOK

SAMPLE	DATE	LENGTH	SEX	AGE	COLOR	%SPAWN
1	9.09	73.4	F	52	W	0.0
2	9.09	81.9	F	51	W	0.0
3	9.09	72.4	F	52	W	99.0
4	9.09	63.5	F	41	W	99.0
5	9.09	83.4	M	51	W	-1.0
6	9.09	72.3	F	41	W	99.0
7	9.09	0.0	M	51	W	-1.0
8	9.09	31.0	M	21	W	-1.0
9	9.09	76.2	M	41	P	-1.0
10	9.09	90.6	M	41	W	-1.0
11	9.09	49.7	M	31	W	-1.0
12	9.09	67.5	F	41	W	99.0
13	9.09	79.5	M	51	W	-1.0
14	9.09	68.1	F	41	W	0.0
15	22.09	76.0	F	41	W	99.0
16	22.09	72.9	F	41	W	99.0
17	22.09	77.0	F	51	W	99.9
18	22.09	65.5	F	41	W	99.0
19	22.09	74.5	M	41	W	-1.0
20	22.09	62.9	F	41	W	99.0
21	22.09	52.4	M	31	W	-1.0
22	22.09	77.3	F	41	W	99.0
23	22.09	61.0	F	31	W	99.0
24	22.09	76.6	M	0	W	-1.0
25	22.09	71.5	F	41	W	99.0
26	22.09	68.0	F	41	W	99.0
27	22.09	60.1	F	31	W	99.0
28	22.09	74.1	M	41	W	-1.0
29	22.09	65.5	F	0	W	99.0
30	22.09	77.5	F	51	W	99.0
31	22.09	71.6	F	41	W	99.0
32	22.09	67.7	F	0	W	99.0
33	22.09	72.0	F	41	W	99.0
34	22.09	75.5	F	41	W	99.0
35	22.09	73.4	F	0	W	0.0
36	22.09	73.5	M	41	W	-1.0
37	22.09	70.0	F	52	W	99.0
38	22.09	71.9	F	41	W	99.0
39	22.09	61.0	M	31	W	-1.0
40	22.09	75.4	F	52	W	99.0
41	22.09	63.2	F	31	W	99.0
42	22.09	72.6	F	41	W	99.0
43	22.09	69.0	F	41	W	99.0
44	22.09	71.1	F	52	W	99.0
45	22.09	69.0	M	42	W	-1.0
46	22.09	75.0	M	31	W	-1.0
47	22.09	76.7	M	41	W	-1.0
48	22.09	61.1	F	41	W	99.0
49	22.09	71.7	F	41	W	0.0
50	22.09	53.0	F	31	W	99.0
51	22.09	71.0	F	41	W	99.0
52	22.09	69.6	F	41	W	99.0
53	22.09	79.8	M	41	W	-1.0
54	22.09	70.5	F	41	W	99.0
55	22.09	72.9	M	41	W	-1.0
56	22.09	75.3	M	41	W	-1.0
57	22.09	55.9	M	31	W	-1.0
58	22.09	77.5	F	41	W	99.0
59	22.09	65.5	F	41	W	99.0
60	22.09	73.5	F	41	W	99.0
61	22.09	60.2	F	31	W	99.0
62	22.09	67.0	F	41	W	99.0
63	22.09	72.4	F	41	W	99.0
64	22.09	81.3	M	41	W	-1.0
65	22.09	61.3	F	41	W	99.0
66	22.09	68.9	F	41	W	99.0
67	22.09	72.2	F	41	W	99.0
68	22.09	70.5	F	41	W	99.0
69	22.09	66.5	F	52	W	99.0
70	23.09	73.8	F	41	W	0.0
71	23.09	82.4	M	41	W	-1.0
72	23.09	73.1	F	41	W	99.0
73	23.09	80.0	M	51	W	-1.0
74	23.09	72.4	F	41	W	99.0
75	23.09	62.8	F	31	W	99.0
76	23.09	71.1	F	41	W	99.0
77	23.09	57.0	M	31	W	-1.0
78	23.09	72.7	F	41	W	99.0
79	23.09	69.2	F	41	W	99.0
80	23.09	74.2	F	41	W	99.0
81	23.09	70.5	F	41	W	99.0
82	23.09	72.3	F	52	W	99.0
83	23.09	70.3	F	41	W	0.0
84	23.09	70.3	F	41	W	99.0
85	23.09	69.2	F	0	W	99.0
86	23.09	57.1	M	31	W	-1.0
87	23.09	68.3	F	41	H	99.0
88	23.09	68.8	F	0	W	99.0
89	23.09	60.2	F	31	W	99.0
90	23.09	52.7	M	42	W	-1.0
91	23.09	70.4	F	41	W	99.0
92	23.09	62.6	F	41	W	99.0
93	23.09	79.2	M	52	W	-1.0
94	23.09	71.0	F	0	W	99.0
95	23.09	72.6	M	41	W	-1.0
96	23.09	62.7	M	31	W	-1.0
97	23.09	70.3	F	41	W	99.0
98	23.09	70.3	F	0	W	99.0
99	23.09	72.2	F	0	W	99.0
100	23.09	70.8	F	41	W	99.0
101	23.09	66.1	F	0	W	99.0
102	23.09	72.6	F	52	W	99.0
103	23.09	71.0	F	41	W	99.0
104	23.09	62.3	F	41	W	99.0
105	23.09	57.5	F	42	W	99.0
106	23.09	53.0	M	31	W	-1.0
107	23.09	68.2	F	41	W	99.0
108	23.09	68.0	F	52	W	99.0
109	23.09	64.6	F	0	W	99.0
110	23.09	67.8	F	41	W	99.0
111	23.09	62.0	F	31	W	99.0
112	23.09	73.7	F	52	W	99.0
113	23.09	66.7	F	0	W	99.0
114	23.09	71.4	F	41	W	99.0
115	28.09	74.4	M	41	H	-1.0
116	28.09	62.2	F	31	W	99.0
117	28.09	73.4	F	41	W	99.0
118	28.09	70.7	F	41	W	99.0
119	28.09	76.2	F	41	W	99.0
120	28.09	74.1	F	41	W	99.0
121	28.09	75.5	F	41	W	99.0
122	28.09	77.0	F	41	W	99.0
123	28.09	72.2	F	41	W	99.0
124	28.09	71.4	F	41	W	99.0
125	28.09	65.3	F	52	W	99.0
126	28.09	69.3	F	41	W	99.0
127	30.09	71.1	F	41	W	99.0
128	30.09	65.9	F	41	W	99.0
129	30.09	69.3	F	0	W	99.0
130	30.09	70.1	F	41	W	99.0
131	30.09	73.4	F	41	W	99.0
132	30.09	82.3	M	51	W	-1.0
133	30.09	58.1	F	31	W	99.0
134	1.10	75.5	F	52	W	99.0
135	6.10	0.0	U	41	0	-1.0

CHILKO RIVER 1980   205 ADULT CHINOOK

SAMPLE	DATE	LENGTH	SEX	AGE	COLOR	%SPAWN
1	7.09	65.5	F	52	W	100.0
2	7.09	70.0	M	0	R	100.0
3	8.09	69.0	F	52	W	100.0
4	10.09	76.0	M	0	W	0.0
5	10.09	64.5	F	52	W	99.0
6	10.09	56.0	F	52	W	100.0
7	11.09	71.0	F	41	W	99.0
8	11.09	59.5	F	42	W	0.0
9	11.09	65.5	F	41	W	100.0
10	11.09	65.0	F	52	W	95.0
11	11.09	71.5	M	41	W	100.0
12	11.09	75.0	F	51	W	99.0
13	11.09	80.0	M	41	W	100.0
14	11.09	68.0	F	52	W	100.0
15	11.09	59.0	F	31	R	100.0
16	11.09	68.0	F	41	W	100.0
17	11.09	47.5	M	42	R	100.0
18	11.09	77.5	F	41	W	98.0
19	11.09	66.0	F	41	R	0.0
20	11.09	57.0	F	31	W	100.0
21	12.09	59.1	M	31	W	100.0
22	12.09	68.0	F	52	W	100.0
23	12.09	75.5	M	41	W	100.0
24	12.09	72.0	M	52	W	100.0
25	12.09	67.5	F	52	W	100.0
26	12.09	79.0	M	41	W	100.0
27	12.09	78.5	M	41	R	80.0
28	12.09	61.0	F	41	W	99.0
29	12.09	69.5	F	41	W	100.0
30	12.09	74.0	F	41	W	100.0
31	12.09	75.0	M	41	W	100.0
32	12.09	68.5	M	52	W	100.0
33	12.09	67.0	F	42	W	100.0
34	12.09	75.5	M	52	W	100.0
35	12.09	81.5	M	51	W	100.0
36	12.09	81.0	F	51	W	99.0
37	12.09	73.5	M	41	W	100.0
38	12.09	73.5	M	41	W	100.0
39	12.09	76.5	M	41	W	80.0
40	12.09	73.5	M	52	W	100.0
41	12.09	72.5	M	52	W	50.0
42	12.09	49.5	M	41	W	100.0
43	12.09	70.5	F	41	W	99.0
44	12.09	63.0	M	42	W	0.0
45	13.09	68.0	M	52	W	100.0
46	13.09	77.5	M	52	W	100.0
47	13.09	70.5	M	52	W	100.0
48	13.09	68.5	M	41	W	100.0
49	13.09	72.0	F	52	W	100.0
50	12.09	75.5	M	52	W	100.0
51	13.09	66.5	F	31	W	100.0
52	13.09	69.5	M	41	W	100.0
53	13.09	69.0	M	-1	W	100.0
54	13.09	71.5	F	41	W	100.0
55	13.09	74.0	M	-1	R	100.0
56	13.09	75.5	M	32	W	50.0
57	13.09	68.5	F	52	W	100.0
58	13.09	68.5	M	41	W	80.0
59	13.09	69.0	F	41	R	100.0
60	13.09	76.0	M	52	W	100.0
61	13.09	64.5	F	0	W	100.0
62	13.09	68.0	F	42	R	99.0
63	13.09	71.5	M	41	R	0.0
64	13.09	78.0	F	41	W	99.0
65	13.09	68.5	F	52	W	99.0
66	13.09	74.0	F	52	W	100.0
67	13.09	63.5	M	0	R	50.0
68	13.09	69.0	F	41	W	100.0
69	13.09	72.0	M	52	W	100.0
70	13.09	70.5	F	52	W	100.0
71	13.09	69.0	F	52	W	100.0
72	13.09	79.5	M	41	W	67.0
73	13.09	74.5	F	41	W	67.0
74	13.09	54.5	M	42	R	100.0
75	13.09	69.0	F	52	W	100.0
76	13.09	71.0	F	52	W	100.0
77	13.09	70.0	M	52	W	100.0
78	13.09	73.5	M	52	R	0.0
79	13.09	79.0	M	53	W	100.0
80	13.09	74.0	F	53	W	99.0
81	13.09	73.0	F	0	W	100.0
82	13.09	66.0	M	52	W	100.0
83	13.09	66.0	F	41	W	0.0
84	14.09	66.5	M	52	W	100.0
85	14.09	69.0	F	52	W	100.0
86	14.09	76.5	M	52	R	90.0
87	14.09	70.5	F	41	W	100.0
88	14.09	82.0	M	51	W	0.0
89	14.09	75.0	M	41	R	100.0
90	14.09	72.0	M	41	W	67.0
91	14.09	66.0	F	52	W	100.0
92	14.09	71.5	F	52	W	99.0
93	14.09	73.0	F	41	W	100.0
94	14.09	63.0	M	42	W	100.0
95	17.09	79.5	M	52	W	80.0
96	17.09	74.0	F	41	R	100.0
97	17.00	81.0	M	41	W	80.0
98	17.09	65.5	F	41	W	100.0
99	17.09	76.5	F	52	W	100.0
100	17.09	74.0	F	0	W	100.0
101	17.09	67.0	M	52	W	100.0
102	17.09	73.5	M	52	W	100.0
103	17.09	67.0	F	52	W	100.0
104	17.09	64.5	M	52	W	100.0
105	17.09	77.5	F	52	W	100.0
106	17.09	72.0	F	52	W	99.0
107	17.09	70.0	M	0	W	100.0
108	17.09	69.0	F	52	W	100.0
109	17.09	72.5	F	52	W	100.0
110	17.09	67.0	F	52	W	100.0
111	17.09	70.5	F	52	W	90.0
112	17.09	76.0	M	53	W	100.0
113	17.09	68.0	F	53	W	100.0
114	17.09	75.5	M	52	W	100.0
115	17.09	77.0	M	52	W	100.0
116	17.09	57.5	F	52	R	100.0
117	17.09	69.5	M	52	W	100.0
118	17.09	66.5	F	41	W	100.0
119	17.09	68.5	F	52	W	100.0
120	17.09	69.0	M	41	W	100.0
121	17.09	77.0	M	52	W	100.0
122	17.09	72.0	M	53	W	100.0
123	17.09	63.5	M	52	R	100.0
124	17.09	60.5	F	42	W	100.0
125	17.09	75.0	F	-1	W	100.0
126	17.09	75.5	M	52	R	100.0
127	17.09	71.5	F	52	W	100.0
128	17.09	74.0	F	-1	W	100.0
129	17.09	75.0	M	-1	W	80.0
130	17.09	75.0	F	-1	W	99.0
131	17.09	58.5	M	42	W	100.0
132	17.09	76.5	M	41	W	100.0
133	17.09	74.5	F	41	W	100.0
134	17.09	73.0	F	41	W	100.0
135	17.09	72.0	M	-1	W	100.0

136	17.09	79.0	F	-1	W	99.0
137	17.09	74.0	M	-1	W	100.0
138	17.09	69.5	F	52	W	99.0
139	17.09	71.5	M	-1	W	80.0
140	17.09	68.5	F	52	R	99.0
141	17.09	50.5	M	32	W	100.0
142	17.09	65.5	F	-1	W	99.0
143	17.09	75.0	F	52	W	100.0
144	17.09	70.5	M	-1	W	100.0
145	17.09	64.0	F	52	W	100.0
146	17.09	76.5	M	-1	W	100.0
147	17.09	75.5	F	52	W	100.0
148	17.09	75.5	F	-1	W	100.0
149	17.09	82.0	M	41	R	80.0
150	17.09	66.0	F	-1	W	95.0
151	17.09	70.0	F	-1	W	99.0
152	17.09	64.0	F	-1	W	100.0
153	17.09	63.0	F	-1	W	100.0
154	17.09	62.0	F	42	W	100.0
155	17.09	76.5	M	-1	W	100.0
156	17.09	74.0	M	52	W	80.0
157	17.09	78.0	F	-1	W	100.0
158	17.09	73.5	F	-1	W	100.0
159	17.09	68.5	F	-1	W	100.0
160	17.09	68.5	F	-1	W	100.0
161	17.09	75.0	M	-1	W	100.0
162	17.09	75.0	M	-1	W	100.0
163	17.09	49.5	M	-1	W	80.0
164	17.09	71.5	F	-1	W	99.0
165	17.09	65.5	F	-1	F	100.0
166	17.09	67.5	F	-1	W	99.0
167	17.09	66.5	F	-1	W	100.0
168	17.09	77.5	F	-1	W	100.0
169	17.09	66.5	F	-1	W	100.0
170	17.09	71.5	F	-1	P	100.0
171	17.09	74.5	F	52	W	100.0
172	17.09	67.5	F	-1	W	100.0
173	17.09	73.0	M	-1	W	100.0
174	17.09	69.5	F	-1	W	100.0
175	17.09	66.5	F	-1	W	100.0
176	17.09	75.5	F	-1	W	99.0
177	17.09	69.0	F	52	W	0.0
178	17.09	68.5	F	-1	W	-1.0
179	17.09	67.0	F	-1	W	90.0
180	17.09	82.5	M	42	W	100.0
181	17.09	73.0	F	-1	W	100.0
182	17.09	66.5	F	-1	W	100.0
183	17.09	58.5	F	42	W	100.0
184	17.09	69.0	F	-1	F	100.0
185	17.09	65.5	F	-1	W	100.0
186	17.09	63.5	F	-1	W	100.0
187	17.09	69.0	F	-1	W	100.0
188	17.09	63.0	M	-1	R	100.0
189	17.09	72.0	F	-1	P	100.0
190	17.09	65.0	F	52	W	100.0
191	17.09	71.5	M	-1	W	100.0
192	17.09	74.5	F	-1	W	100.0
193	17.09	67.5	F	-1	W	100.0
194	17.09	67.0	F	52	W	100.0
195	17.09	70.5	F	-1	W	100.0
196	17.09	68.0	F	-1	W	100.0
197	17.09	74.0	F	52	P	100.0
198	17.09	69.5	F	-1	W	100.0
199	17.09	72.0	M	-1	R	100.0
200	17.09	74.0	M	-1	W	100.0
201	17.09	66.5	F	52	R	20.0
202	17.09	71.0	F	-1	W	100.0
203	17.09	72.0	F	-1	W	100.0
204	17.09	80.5	M	-1	W	100.0
205	17.09	68.0	F	41	W	100.0

CHILKO RIVER 1980 241 ADULT CHINOOK

SAMPLE	DATE	LENGTH	SEX	AGE	COLOR	%SPAWN
1	18.09	82.0	M	-1	W	100.0
2	18.09	69.0	M	-1	W	80.0
3	18.09	70.5	M	-1	W	100.0
4	18.09	54.0	M	-1	R	-1.0
5	18.09	71.5	F	-1	W	99.0
6	18.09	73.0	F	-1	W	100.0
7	18.09	68.5	F	-1	W	100.0
8	18.09	75.0	M	-1	W	100.0
9	18.09	71.0	F	-1	W	100.0
10	18.09	64.5	F	-1	W	100.0
11	18.09	66.0	F	52	W	99.0
12	18.09	69.0	M	41	W	100.0
13	18.09	66.5	F	42	W	100.0
14	18.09	67.5	F	52	W	100.0
15	18.09	71.0	F	52	W	100.0
16	18.09	70.0	F	52	W	100.0
17	18.09	65.5	F	52	W	100.0
18	18.09	56.0	M	-1	W	100.0
19	18.09	41.5	M	32	W	50.0
20	18.09	75.5	M	52	W	100.0
21	18.09	75.5	F	52	F	100.0
22	18.09	67.5	F	52	W	99.0
23	18.09	52.0	M	-1	P	100.0
24	18.09	69.0	F	52	R	100.0
25	18.09	66.5	F	-1	R	100.0
26	18.09	73.0	M	-1	W	80.0
27	18.09	71.5	F	-1	W	100.0
28	18.09	73.0	M	-1	R	80.0
29	18.09	58.5	M	-1	W	30.0
30	18.09	71.5	M	-1	P	100.0
31	18.09	72.5	F	-1	W	100.0
32	18.09	74.5	M	-1	W	100.0
33	18.09	63.5	F	-1	W	99.0
34	18.09	76.0	M	-1	R	80.0
35	18.09	60.5	M	-1	R	100.0
36	18.09	74.5	M	-1	R	100.0
37	18.09	71.5	M	-1	R	100.0
38	18.09	67.0	F	-1	W	100.0
39	18.09	76.0	M	-1	P	80.0
40	18.09	72.0	M	-1	W	80.0
41	18.09	55.5	F	-1	W	100.0
42	18.09	56.5	F	-1	W	99.0
43	18.09	75.0	F	-1	W	100.0
44	18.09	68.5	F	-1	W	100.0
45	18.09	57.5	M	-1	W	100.0
46	18.09	65.0	M	-1	P	100.0
47	18.09	70.0	M	-1	W	100.0
48	18.09	71.0	F	-1	W	100.0
49	18.09	74.0	M	-1	P	100.0
50	18.09	73.5	F	-1	W	100.0
51	18.09	73.5	M	-1	W	80.0
52	18.09	68.5	F	-1	F	100.0
53	18.09	62.5	M	-1	W	80.0
54	18.09	66.0	M	-1	F	80.0
55	18.09	84.0	M	52	W	100.0
56	18.09	61.5	M	-1	F	80.0
57	18.09	78.5	F	52	W	100.0
58	18.09	58.0	M	31	P	100.0
59	18.09	74.5	M	41	W	80.0
60	18.09	61.0	.	42	W	80.0
61	18.09	71.5	F	0	W	100.0
62	18.09	52.0	M	42	W	80.0
63	18.09	76.0	M	52	W	100.0
64	18.09	71.5	F	41	W	100.0
65	18.09	53.0	M	42	W	100.0

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 66 18.09   69.5  F  52  W  100.0   171 20.09   70.0  F  -1  W  -1.0
 67 18.09   72.5  M   0  W   80.0   172 20.09   70.5  F  -1  R  -1.0
 68 18.09   74.5  M  41  W   80.0   173 20.09   71.0  F  -1  P  -1.0
 69 18.09   66.5  M  52  W  100.0   174 20.09   74.0  F  -1  R  -1.0
 70 18.09   77.0  M  41  W   95.0   175 20.09   71.5  F  -1  R  -1.0
 71 18.09   65.0  M  -1  R   80.0   176 20.09   67.5  F  -1  W  -1.0
 72 18.09   73.0  M  -1  W  100.0   177 20.09   71.5  F  -1  W  -1.0
 73 18.09   77.5  M  -1  W  100.0   178 20.09   69.5  F  -1  W  -1.0
 74 18.09   75.5  M  -1  W  100.0   179 20.09   75.0  F  -1  W  -1.0
 75 18.09   81.0  M  -1  R  100.0   180 20.09   71.0  F  -1  W  -1.0
 76 18.09   71.0  M  -1  W  100.0   181 20.09   72.5  F  -1  W  -1.0
 77 18.09   58.5  M  -1  W  100.0   182 20.09   73.0  F  -1  W  -1.0
 78 18.09   69.5  F  -1  W  100.0   183 20.09   70.0  F  -1  W  -1.0
 79 18.09   76.0  M  -1  W  100.0   184 20.09   68.5  F  -1  W  -1.0
 80 18.09   69.5  M  -1  R  100.0   185 20.09   70.5  F  -1  R  -1.0
 81 18.09   66.5  M  -1  W  100.0   186 20.09   70.5  F  -1  W  -1.0
 82 18.09   79.5  M  -1  R  100.0   187 20.09   77.0  F  -1  W  -1.0
 83 18.09   73.5  M  -1  W  100.0   188 20.09   73.0  F  -1  W  -1.0
 84 18.09   74.0  M  -1  W  100.0   189 20.09   68.5  F  -1  W  -1.0
 85 18.09   69.0  M  -1  W  100.0   190 20.09   76.5  F  -1  W  -1.0
 86 18.09   69.5  M  52  W  100.0   191 20.09   65.5  F  -1  W  -1.0
 87 20.09   72.0  F  52  W  100.0   192 20.09   72.0  F  -1  W  -1.0
 88 20.09   72.5  F  52  W  100.0   193 20.09   73.0  F  -1  R  -1.0
 89 20.09   67.5  F  52  W  100.0   194 20.09   69.0  F  -1  W  -1.0
 90 20.09   73.0  F  52  W  100.0   195 20.09   72.5  F  -1  W  -1.0
 91 20.09   70.0  F  52  W  100.0   196 20.09   70.0  F  -1  W  -1.0
 92 20.09   67.0  F  41  W  100.0   197 20.09   65.0  F  -1  W  -1.0
 93 20.09   70.0  F  52  W  100.0   198 20.09   67.5  M   0  W  -1.0
 94 20.09   69.5  F  52  W  100.0   199 20.09   69.5  M  52  R  -1.0
 95 20.09   70.0  F  52  W  100.0   200 20.09   72.5  F  -1  W  -1.0
 96 20.09   68.5  F  52  R  100.0   201 20.09   68.5  F  -1  P  -1.0
 97 20.09   69.5  F  52  W  100.0   202 20.09   73.0  M  -1  W  -1.0
 98 20.09   69.5  F  52  W  100.0   203 20.09   73.5  M  52  W  -1.0
 99 20.09   75.0  F   0  R  100.0   204 20.09   49.5  M  42  R  -1.0
100 20.09   69.0  F  52  W   80.0   205 20.09   62.5  F  -1  W  -1.0
101 20.09   73.0  F  52  R  100.0   206 20.09   51.5  M  42  W  -1.0
102 20.09   68.5  F  52  W  100.0   207 20.09   74.5  F  -1  P  -1.0
103 20.09   74.5  F  52  W  100.0   208 20.09   73.5  M  52  W  -1.0
104 20.09   68.5  F   0  W  100.0   209 20.09   82.5  F  -1  W  -1.0
105 20.09   73.0  F  41  R  100.0   210 20.09   68.0  M  52  W  -1.0
106 20.09   74.5  F  52  W  100.0   211 20.09   73.5  F  -1  W  -1.0
107 20.09   71.5  F  52  W  100.0   212 20.09   78.0  F  -1  R  -1.0
108 20.09   72.5  M  52  W  100.0   213 20.09   74.0  M  52  W  -1.0
109 20.09   57.5  M  52  W  100.0   214 20.09   63.0  M  41  R  -1.0
110 20.09   55.5  M  52  R   50.0   215 20.09   76.0  F  -1  W  -1.0
111 20.09   73.0  F  41  W  100.0   216 20.09   69.5  F  -1  W  -1.0
112 20.09   63.0  F  41  W  100.0   217 20.09   73.0  M  52  W  -1.0
113 20.09   72.0  F  41  W  100.0   218 20.09   75.0  F  -1  W  -1.0
114 20.09   72.0  F  52  W  100.0   219 20.09   70.0  M  52  W  -1.0
115 20.09   68.0  F  41  W  100.0   220 20.09   73.5  F  -1  R  -1.0
116 20.09   70.5  F  41  W  100.0   221 20.09   67.5  M  42  W  -1.0
117 20.09   73.5  F  52  W  100.0   222 20.09   78.5  F  -1  R  -1.0
118 20.09   73.0  M  52  W  100.0   223 20.09   67.5  F  -1  W  -1.0
119 20.09   74.0  F  41  W  100.0   224 20.09   76.0  F  -1  R  -1.0
120 20.09   57.5  F  41  W  100.0   225 20.09    0.0  M  -1  E  -1.0
121 20.09   68.5  F  41  W  100.0   226 20.09   70.0  F  -1  W  -1.0
122 20.09   73.0  F  52  W  100.0   227 20.09   75.5  F  -1  W  -1.0
123 20.09   72.0  F  52  W   95.0   228 20.09   55.5  F  -1  W  -1.0
124 20.09   59.5  M  31  W   -1.0   229 20.09   64.0  F  -1  P  -1.0
125 20.09   74.5  M  52  R   -1.0   230 20.09   58.0  F  -1  W  -1.0
126 20.09   77.0  M  52  W   -1.0   231 20.09   63.0  M  -1  W  -1.0
127 20.09   73.5  M  52  W   -1.0   232 20.09   72.0  F  -1  P  -1.0
128 20.09   71.0  F  52  W   -1.0   233 20.09   76.0  F  -1  W  -1.0
129 20.09   67.0  F  52  W   -1.0   234 20.09   70.0  F  -1  W  -1.0
130 20.09   68.5  F  52  W   -1.0   235 20.09   78.0  M  -1  W  -1.0
131 20.09   71.0  F  52  W   -1.0   236 20.09   65.5  F  -1  W  -1.0
132 20.09   77.5  M  52  W   -1.0   237 20.09   71.5  F  -1  R  -1.0
133 20.09   63.5  F   0  W   -1.0   238 20.09   71.5  F  -1  P  -1.0
134 20.09   61.5  F  52  W   -1.0   239 20.09   69.0  F  -1  W  -1.0
135 20.09   71.0  F  52  W   -1.0   240 20.09   56.5  F  -1  W  -1.0
                                    241 20.09   68.0  F  -1  R  -1.0
```

CHILKO RIVER 1980   228 ADULT CHINOOK

SAMPLE	DATE	LENGTH	SEX	AGE	COLOR	%SPAWN
1	21.09	68.0	F	-1	W	-1.0
2	21.09	77.5	F	-1	W	-1.0
3	21.09	70.5	F	-1	W	-1.0
4	21.09	75.5	F	-1	W	-1.0
5	21.09	81.5	M	-1	W	-1.0
6	21.09	55.5	M	-1	P	-1.0
7	21.09	76.0	F	-1	P	-1.0
8	21.09	68.5	F	-1	W	-1.0
9	21.09	47.0	M	32	W	-1.0
10	21.09	73.5	F	-1	P	-1.0
11	21.09	72.0	F	-1	W	-1.0
12	21.09	69.0	F	-1	P	-1.0
13	21.09	58.5	M	42	H	-1.0
14	21.09	69.5	F	-1	R	-1.0
15	21.09	67.5	F	-1	W	-1.0
16	21.09	67.0	M	42	W	-1.0
17	21.09	65.0	M	42	W	-1.0
18	21.09	75.5	F	-1	P	-1.0
19	21.09	54.5	M	-1	W	-1.0
20	21.09	75.0	M	52	W	-1.0
21	21.09	64.0	M	-1	W	-1.0
22	21.09	73.0	M	-1	W	-1.0
23	21.09	77.0	F	-1	W	-1.0
24	21.09	72.5	M	-1	W	-1.0
25	21.09	73.5	M	-1	W	-1.0
26	21.09	71.5	M	-1	W	-1.0
27	21.09	77.5	M	-1	W	-1.0
28	22.09	77.0	M	52	P	-1.0
29	22.09	51.5	M	42	P	-1.0
30	22.09	76.5	M	52	W	-1.0
31	22.09	68.5	F	-1	W	-1.0
32	22.09	57.5	F	-1	W	-1.0
33	22.09	75.0	M	0	W	-1.0
34	22.09	77.0	M	52	W	-1.0
35	22.09	72.5	M	-1	W	-1.0
36	22.09	76.0	F	-1	W	-1.0
37	22.09	83.0	M	62	P	-1.0
38	22.09	75.0	M	-1	W	-1.0
39	22.09	66.5	M	-1	W	-1.0
40	22.09	71.5	M	-1	W	-1.0
41	22.09	75.5	F	-1	W	-1.0
42	22.09	52.5	M	-1	W	-1.0
43	22.09	74.0	M	-1	W	-1.0
44	22.09	53.0	M	-1	W	-1.0
45	22.09	52.5	M	-1	W	-1.0
46	22.09	72.0	M	-1	W	-1.0
47	22.09	75.0	M	-1	W	-1.0
48	22.09	53.0	M	-1	W	-1.0
49	22.09	80.0	M	-1	W	-1.0
50	22.09	54.5	M	-1	W	-1.0
51	22.09	65.0	M	-1	W	-1.0
52	22.09	72.0	F	-1	P	-1.0
53	22.09	71.0	F	-1	W	-1.0
54	22.09	71.0	F	-1	P	-1.0
55	22.09	53.0	M	-1	W	-1.0
56	2.09	53.5	M	-1	P	-1.0
57	22.09	55.0	M	-1	W	-1.0
58	22.09	57.5	M	-1	W	-1.0
59	22.09	75.0	M	-1	W	-1.0
60	22.09	53.5	M	-1	W	-1.0
61	22.09	73.5	M	-1	W	-1.0
62	22.09	52.0	M	-1	W	-1.0
63	22.09	66.0	F	-1	W	-1.0
64	22.09	63.0	F	-1	W	-1.0
65	22.09	74.5	M	-1	W	-1.0
66	22.09	69.0	F	-1	W	-1.0
67	22.09	68.5	F	-1	W	-1.0
68	22.09	67.5	F	52	W	-1.0
69	22.09	80.0	M	-1	W	-1.0
70	22.09	78.0	M	-1	W	-1.0
71	22.09	68.0	M	-1	W	-1.0
72	22.09	74.5	M	-1	W	-1.0
73	22.09	57.5	M	-1	W	-1.0
74	22.09	56.5	M	-1	W	-1.0
75	22.09	71.0	M	-1	R	-1.0
76	22.09	71.0	F	-1	W	-1.0
77	22.09	69.5	F	-1	W	-1.0
78	22.09	81.5	M	51	W	-1.0
79	22.09	79.5	M	52	B	-1.0
80	22.09	71.5	F	-1	W	-1.0
81	22.09	71.0	F	-1	R	-1.0
82	22.09	76.0	F	-1	R	-1.0
83	22.09	70.5	F	-1	W	-1.0
84	22.09	53.5	M	42	W	-1.0
85	22.09	69.5	F	-1	W	-1.0
86	22.09	72.5	M	52	W	-1.0
87	22.09	68.0	F	-1	P	-1.0
88	22.09	80.0	F	-1	W	-1.0
89	22.09	66.0	F	-1	W	-1.0
90	22.09	70.0	F	-1	W	-1.0
91	22.09	68.0	F	-1	R	-1.0
92	22.09	81.0	M	62	W	-1.0
93	22.09	71.5	F	-1	W	-1.0
94	22.09	67.0	F	-1	R	-1.0
95	22.09	70.5	F	-1	W	-1.0
96	22.09	73.0	M	-1	W	-1.0
97	22.09	54.5	M	42	W	-1.0
98	22.09	52.5	M	42	W	-1.0
99	22.09	66.0	F	-1	W	-1.0
100	22.09	68.0	F	-1	W	-1.0
101	22.09	69.5	F	-1	W	-1.0
102	2.09	71.0	F	-1	W	-1.0
103	22.09	70.5	F	-1	W	-1.0
104	22.09	70.5	F	-1	W	-1.0
105	22.09	71.5	F	52	W	-1.0
106	22.09	72.5	F	52	W	-1.0
107	22.09	68.0	F	-1	W	-1.0
108	22.09	68.5	M	-1	B	-1.0
109	22.09	78.0	F	-1	W	-1.0
110	22.09	73.5	M	-1	W	-1.0
111	22.09	68.5	F	-1	P	-1.0
112	22.09	77.5	M	-1	W	-1.0
113	22.09	67.0	M	-1	W	-1.0
114	22.09	79.5	M	-1	W	-1.0
115	22.09	76.5	M	-1	W	-1.0
116	22.09	67.5	F	-1	W	-1.0
117	22.09	62.5	F	-1	B	-1.0
118	22.09	69.0	F	-1	W	-1.0
119	22.09	68.5	F	-1	R	-1.0
120	22.09	69.0	F	52	R	-1.0
121	22.09	71.5	F	52	W	-1.0
122	22.09	67.5	F	-1	W	-1.0
123	22.09	67.5	F	-1	W	-1.0
124	22.09	70.5	F	52	R	-1.0
125	22.09	55.5	M	-1	W	-1.0
126	22.09	71.5	F	-1	W	-1.0
127	22.09	55.5	F	52	W	-1.0
128	22.09	53.5	M	42	R	-1.0
129	22.09	74.5	M	-1	W	-1.0
130	22.09	74.0	F	52	W	-1.0
131	22.09	68.0	F	-1	W	-1.0
132	22.09	76.5	M	-1	W	-1.0
133	22.09	75.0	F	-1	W	-1.0
134	22.09	79.5	M	-1	W	-1.0
135	22.09	69.0	F	-1	W	-1.0

136	22.09	61.5	M	-1	W	-1.0
137	22.09	74.0	F	-1	W	-1.0
138	22.09	71.0	M	-1	W	-1.0
139	22.09	77.0	M	-1	W	-1.0
140	22.09	68.5	F	-1	W	-1.0
141	22.09	78.5	M	-1	W	-1.0
142	22.09	75.0	M	-1	W	-1.0
143	22.09	76.5	M	-1	W	-1.0
144	22.09	73.0	M	-1	W	-1.0
145	22.09	70.0	M	-1	W	-1.0
146	22.09	73.5	M	-1	W	-1.0
147	22.09	77.0	M	-1	W	-1.0
148	22.09	57.5	M	-1	W	-1.0
149	22.09	70.0	M	-1	W	-1.0
150	22.09	68.5	F	-1	W	-1.0
151	22.09	78.0	M	-1	W	-1.0
152	22.09	80.0	M	-1	R	-1.0
153	22.09	78.0	M	-1	W	-1.0
* 154	22.09	75.0	M	52	W	-1.0
155	22.09	72.0	F	-1	W	-1.0
156	22.09	60.0	M	-1	W	-1.0
157	22.09	84.0	M	-1	W	-1.0
158	22.09	68.5	F	-1	W	-1.0
159	22.09	77.0	M	-1	W	-1.0
160	22.09	70.0	M	-1	W	-1.0
161	22.09	70.0	F	-1	W	-1.0
162	22.09	74.0	F	-1	W	-1.0
163	22.09	52.5	M	-1	W	-1.0
164	22.09	59.5	F	-1	W	-1.0
165	22.09	68.0	F	-1	W	-1.0
166	22.09	70.5	F	-1	W	-1.0
167	22.09	67.0	F	-1	W	-1.0
168	22.09	75.5	M	-1	R	-1.0
169	22.09	74.0	M	-1	W	-1.0
170	22.09	63.0	M	-1	W	-1.0
171	22.09	66.0	F	-1	W	-1.0
172	22.09	68.0	F	-1	W	-1.0
173	22.09	73.0	M	-1	W	-1.0
174	22.09	58.5	M	-1	W	-1.0
175	22.09	67.0	F	-1	R	-1.0
176	22.09	44.0	M	-1	W	-1.0
177	22.09	71.0	M	-1	W	-1.0
178	22.09	68.0	F	-1	W	-1.0
179	22.09	59.5	M	-1	W	-1.0
180	22.09	62.0	F	-1	R	-1.0
181	22.00	54.5	M	-1	W	-1.0
182	22.09	75.0	M	-1	W	-1.0
183	22.09	70.5	F	-1	W	-1.0
184	22.09	70.5	M	-1	W	-1.0
185	22.09	68.0	M	-1	W	-1.0
186	22.09	53.0	M	-1	W	-1.0
187	22.09	48.0	M	-1	W	-1.0
188	22.09	71.5	M	-1	W	-1.0
189	22.09	73.0	F	-1	W	-1.0
190	22.09	66.5	M	-1	W	-1.0
191	22.09	52.5	M	-1	W	-1.0
192	22.09	72.0	F	-1	W	-1.0
193	22.09	70.0	M	-1	W	-1.0
194	22.09	70.0	F	-1	W	-1.0
195	22.09	59.0	M	-1	W	-1.0
196	22.09	70.5	F	-1	W	-1.0
197	22.09	68.0	F	-1	W	-1.0
198	22.09	75.5	F	-1	W	-1.0
199	22.09	78.0	F	-1	W	-1.0
200	22.09	78.0	M	-1	W	-1.0
201	22.09	66.0	F	-1	W	-1.0
202	22.09	69.0	F	-1	W	-1.0
203	22.09	63.0	M	-1	W	-1.0
204	22.09	72.0	F	-1	W	-1.0
205	22.09	78.0	M	-1	W	-1.0
206	22.09	73.0	M	-1	W	-1.0
207	22.09	70.5	F	-1	W	-1.0
208	22.09	64.5	M	-1	W	-1.0
209	22.09	76.0	F	-1	W	-1.0
210	22.09	56.5	M	-1	P	-1.0
211	22.09	71.5	F	-1	W	-1.0
212	22.09	65.0	M	-1	W	-1.0
213	22.09	84.0	M	-1	W	-1.0
214	22.09	83.5	M	-1	W	-1.0
215	22.09	65.0	M	-1	W	-1.0
216	22.09	71.0	F	-1	W	-1.0
217	22.09	53.5	M	-1	W	-1.0
218	22.09	65.5	F	-1	W	-1.0
219	22.09	73.0	M	-1	R	-1.0
220	22.09	78.0	M	-1	W	-1.0
221	22.09	70.5	F	-1	W	-1.0
222	22.09	53.0	M	-1	W	-1.0
223	22.09	65.5	F	-1	W	-1.0
224	22.09	69.5	F	-1	W	-1.0
225	22.09	83.0	M	-1	W	-1.0
226	22.09	65.5	F	-1	W	-1.0
227	22.09	55.0	F	-1	W	100.0
228	22.09	67.5	F	-1	W	100.0

*CWT fish - only tag recovery

CHILKO RIVER 1980   250 ADULT CHINOOK

SAMPLE	DATE	LENGTH	SEX	AGE	COLOR	%SPAWN
1	23.09	73.0	F	-1	W	100.0
2	23.09	68.5	F	-1	W	100.0
3	23.09	70.5	F	-1	W	100.0
4	23.09	69.0	F	-1	W	100.0
5	23.09	70.5	F	-1	W	100.0
6	23.09	70.5	F	-1	W	100.0
7	23.09	74.5	F	-1	R	100.0
8	23.09	71.5	F	-1	W	100.0
9	23.09	70.5	F	-1	W	100.0
10	23.09	69.5	F	-1	W	100.0
11	23.09	73.0	F	-1	R	100.0
12	23.09	71.0	F	-1	W	100.0
13	23.09	75.5	F	-1	W	100.0
14	23.09	73.5	F	-1	R	100.0
15	23.09	69.5	F	-1	W	100.0
16	23.09	70.5	F	-1	W	100.0
17	23.09	60.0	F	-1	W	100.0
18	23.09	74.0	M	-1	W	100.0
19	23.09	72.5	M	-1	W	100.0
20	23.09	70.0	F	-1	W	100.0
21	23.09	72.0	F	-1	W	100.0
22	23.09	73.5	F	-1	W	100.0
23	23.09	69.5	F	-1	W	100.0
24	23.09	77.0	F	-1	R	100.0
25	23.09	76.0	M	-1	R	100.0
26	23.09	73.5	M	-1	W	100.0
27	23.09	66.5	F	-1	R	100.0
28	23.09	77.0	F	-1	W	100.0
29	23.09	72.0	M	-1	W	100.0
30	23.09	73.0	F	-1	W	100.0
31	23.09	71.0	F	-1	R	100.0
32	23.09	62.5	F	-1	W	100.0
33	23.09	68.0	F	-1	W	100.0
34	23.09	70.5	M	-1	R	100.0
35	23.09	62.5	F	-1	W	100.0
36	23.09	62.0	M	-1	R	100.0
37	23.09	79.5	M	-1	W	100.0
38	23.09	71.0	F	-1	W	100.0
39	23.09	72.5	F	-1	W	100.0
40	23.09	75.0	F	-1	R	100.0
41	23.09	73.0	M	-1	R	100.0
42	23.09	67.5	F	-1	W	100.0
43	23.09	73.5	F	-1	R	100.0
44	23.09	69.0	F	-1	W	100.0
45	23.09	72.0	F	-1	W	100.0
46	23.09	75.5	F	-1	R	100.0
47	23.09	72.5	M	-1	W	100.0
48	23.09	71.5	M	-1	R	100.0
49	23.09	75.5	F	-1	R	100.0
50	23.09	74.5	F	-1	R	100.0
51	23.09	69.0	F	-1	R	100.0
52	23.09	56.5	M	-1	R	100.0
53	23.09	66.0	F	-1	W	100.0
54	23.09	71.0	F	-1	R	100.0
55	23.09	73.5	M	-1	W	100.0
56	23.09	58.0	F	-1	W	100.0
57	23.09	70.5	F	-1	W	100.0
58	23.09	66.5	M	-1	W	100.0
59	23.09	70.0	F	-1	W	100.0
60	23.09	72.0	F	-1	R	100.0
61	23.09	53.0	M	-1	R	100.0
62	23.09	75.0	F	-1	W	100.0
63	23.09	65.0	F	-1	W	100.0
64	23.09	64.5	F	-1	R	100.0
65	23.09	76.5	M	-1	R	100.0
66	23.09	74.5	F	-1	R	100.0
67	23.09	70.5	F	-1	R	100.0
68	23.09	68.5	M	-1	R	100.0
69	23.09	58.5	F	-1	R	100.0
70	23.09	69.5	F	-1	W	100.0
71	23.09	71.0	F	-1	W	95.0
72	23.09	66.0	F	-1	R	100.0
73	23.09	60.0	M	-1	W	25.0
74	23.09	78.0	F	-1	W	100.0
75	23.09	60.5	M	-1	W	100.0
76	23.09	74.0	F	-1	R	100.0
77	23.09	68.5	F	-1	W	100.0
78	23.09	62.0	F	-1	R	100.0
79	23.09	73.0	F	-1	F	100.0
80	23.09	51.0	M	-1	W	100.0
81	23.09	78.0	F	-1	R	100.0
82	23.09	69.0	F	-1	W	100.0
83	23.09	67.5	F	-1	W	100.0
84	23.09	69.0	F	-1	W	100.0
85	23.09	70.0	F	-1	W	100.0
86	23.09	71.5	F	-1	R	100.0
87	23.09	61.5	F	-1	R	100.0
88	23.09	73.0	M	-1	W	25.0
89	23.09	71.5	F	-1	R	100.0
90	23.09	67.5	F	-1	W	100.0
91	23.09	71.5	F	-1	W	100.0
92	23.09	70.5	F	-1	R	100.0
93	23.09	70.0	F	-1	W	100.0
94	23.09	64.5	F	-1	W	100.0
95	23.09	69.5	F	-1	W	100.0
96	23.09	73.0	F	-1	W	100.0
97	23.09	65.5	F	-1	W	100.0
98	23.09	70.5	F	-1	R	100.0
99	23.09	64.5	F	-1	W	100.0
100	23.09	69.5	F	-1	R	100.0
101	23.09	66.0	F	-1	R	100.0
102	23.09	76.0	M	-1	W	100.0
103	23.09	74.5	F	-1	R	100.0
104	23.09	69.5	F	-1	W	100.0
105	23.09	67.5	F	-1	W	100.0
106	23.09	73.5	F	-1	W	100.0
107	23.09	77.0	F	-1	W	100.0
108	23.09	71.5	F	-1	R	100.0
109	23.09	74.0	F	-1	R	100.0
110	23.09	73.5	F	-1	W	100.0
111	23.09	77.5	F	-1	W	100.0
112	23.09	64.5	F	-1	R	100.0
113	23.09	67.5	F	-1	R	100.0
114	23.09	70.0	F	-1	F	100.0
115	23.09	67.0	F	-1	W	100.0
116	23.09	67.5	F	-1	W	100.0
117	23.09	69.5	F	-1	W	100.0
118	23.09	67.5	F	-1	W	100.0
119	23.09	63.0	F	-1	W	100.0
120	23.09	71.0	F	-1	R	100.0
121	23.09	71.0	F	-1	W	100.0
122	23.09	74.0	F	-1	R	100.0
123	23.09	71.5	F	-1	W	100.0
124	23.09	68.5	F	-1	W	100.0
125	23.09	68.0	F	-1	W	100.0
126	23.09	77.5	F	-1	R	100.0
127	23.09	69.5	F	-1	R	100.0
128	23.09	69.0	F	-1	W	100.0
129	23.09	73.5	F	-1	W	100.0
130	23.09	73.0	F	-1	W	100.0
131	23.09	71.5	F	-1	R	100.0
132	23.09	73.5	F	-1	W	100.0
133	23.09	72.5	F	-1	W	100.0
134	23.09	72.5	F	-1	R	100.0
135	23.09	69.5	F	-1	R	100.0

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136 23.09   71.0   F   -1   W   100.0
137 23.09   69.5   F   -1   R   100.0
138 23.09   67.5   F   -1   R   100.0
139 23.09   74.0   F   -1   W   100.0
140 23.09   78.0   M   -1   W   100.0
141 23.09   67.0   F   -1   W   100.0
142 23.09   77.5   M   -1   W   100.0
143 23.09   65.5   F   -1   W   100.0
144 23.09   65.5   F   -1   W   100.0
145 23.09   72.0   M   -1   W   100.0
146 23.09   73.0   F   -1   W   100.0
147 23.09   69.5   F   -1   W   100.0
148 23.09   72.5   F   -1   W   100.0
149 23.09   74.0   F   -1   W   100.0
150 23.09   68.5   F   -1   R    25.0
151 23.09   55.0   M   -1   W   100.0
152 23.09   63.5   F   -1   W   100.0
153 23.09   67.0   F   -1   P   100.0
154 23.09   67.0   F   -1   W   100.0
155 23.09   66.0   F   -1   R   100.0
156 24.09   75.5   M   -1   W    25.0
157 24.09   70.0   F   -1   F   100.0
158 24.09   67.0   F   -1   R   100.0
159 24.09   75.5   F   -1   R   100.0
160 24.09   76.0   F   -1   W   100.0
161 24.09   74.0   F   -1   R   100.0
162 24.09   67.5   F   -1   R   100.0
163 24.09   74.0   F   -1   R   100.0
164 24.09   73.0   F   -1   W   100.0
165 24.09   74.5   M   -1   W    25.0
166 24.09   70.5   F   -1   W   100.0
167 24.09   72.0   F   -1   W   100.0
168 24.09   72.0   F   -1   R   100.0
169 24.09   71.0   F   -1   W   100.0
170 24.09   76.0   F   -1   W   100.0
171 24.09   70.5   F   -1   R   100.0
172 24.09   74.5   F   -1   W   100.0
173 24.09   74.5   F   -1   R   100.0
174 24.09   68.0   F   -1   R   100.0
175 24.09   72.0   F   -1   R   100.0
176 24.09   74.0   F   -1   W   100.0
177 24.09   68.5   F   -1   R   100.0
178 24.09   78.5   M   -1   W   100.0
179 24.09   71.0   F   -1   W   100.0
180 24.09   77.5   F   -1   R   100.0
181 24.09   59.5   M   -1   W   100.0
182 24.09   63.5   F   -1   W   100.0
183 24.09   67.0   F   -1   W   100.0
184 24.09   72.0   F   -1   W   100.0
185 24.09   59.0   M   -1   W   100.0
186 24.09   71.5   F   -1   F   100.0
187 24.09   72.0   F   -1   P   100.0
188 24.09   72.0   F   -1   W   100.0
189 24.09   66.0   F   -1   P   100.0
190 24.09   67.0   F   -1   W   100.0
191 24.09   57.5   F   -1   W   100.0
192 24.09   68.5   F   -1   R   100.0
193 24.09   61.0   F   -1   W   100.0
194 24.09   70.5   F   -1   R   100.0
195 24.09   66.5   F   -1   W   100.0
196 24.09   68.0   F   -1   R   100.0
197 24.09   66.5   F   -1   R   100.0
198 24.09   62.0   F   -1   P   100.0
199 24.09   77.0   M   -1   W   100.0
200 24.09   80.5   F   -1   W   100.0
201 24.09   77.5   F   -1   W   100.0
202 24.09   76.5   F   -1   W   100.0
203 24.09   80.5   M   -1   W    25.0
204 24.09   68.0   F   -1   R   100.0
205 24.09   68.5   F   -1   R   100.0
206 24.09   72.5   F   -1   W   100.0
207 24.09   72.0   F   -1   R   100.0
208 24.09   74.5   F   -1   W   100.0
209 24.09   72.0   F   -1   R   100.0
210 24.09   75.5   F   -1   W   100.0
211 24.09   72.0   F   -1   R   100.0
212 24.09   74.0   F   -1   W   100.0
213 24.09   73.0   F   -1   W   100.0
214 24.09   66.0   F   -1   R   100.0
215 24.09   65.5   F   -1   R   100.0
216 24.09   68.0   F   -1   W   100.0
217 24.09   69.5   F   -1   R   100.0
218 24.09   69.0   F   -1   R   100.0
219 24.09   73.0   F   -1   R   100.0
220 24.09   68.0   F   -1   W   100.0
221 24.09   75.0   F   -1   F   100.0
222 24.09   72.0   F   -1   W   100.0
223 24.09   74.5   F   -1   W   100.0
224 24.09   71.5   F   -1   W   100.0
225 24.09   72.5   F   -1   W   100.0
226 24.09   70.0   F   -1   W   100.0
227 24.09   66.0   F   -1   W   100.0
228 24.09   70.0   F   -1   P   100.0
229 24.09   69.0   F   -1   W   100.0
230 24.09   61.5   F   -1   R   100.0
231 24.09   66.0   F   -1   W   100.0
232 24.09   67.0   F   -1   W   100.0
233 24.09   67.0   F   -1   P   100.0
234 24.09   71.5   F   -1   W   100.0
235 24.09   77.0   F   -1   W   100.0
236 24.09   74.0   F   -1   W   100.0
237 24.09   68.5   F   -1   W   100.0
238 24.09   75.0   F   -1   W   100.0
239 24.09   69.5   F   -1   W   100.0
240 24.09   73.5   M   -1   W   100.0
241 24.09   72.5   F   -1   R   100.0
242 24.09   63.0   F   -1   W   100.0
243 24.09   62.5   F   -1   W   100.0
244 24.09   71.0   F   -1   W   100.0
245 24.09   63.5   F   -1   W   100.0
246 24.09   69.5   F   -1   W   100.0
247 24.09   76.5   F   -1   W   100.0
248 24.09   70.0   F   -1   W   100.0
249 24.09   70.5   F   -1   W   100.0
250 24.09   74.5   F   -1   W   100.0
```

CHILKO RIVER 1980   238 ADULT CHINOOK

SAMPLE	DATE	LENGTH	SEX	AGE	COLOR	%SPAWN
1	24.09	70.5	F	-1	R	100.0
2	24.09	68.0	F	-1	R	100.0
3	24.09	75.5	F	-1	R	100.0
4	24.09	69.5	F	-1	R	100.0
5	24.09	73.5	F	-1	R	100.0
6	24.09	69.0	F	-1	R	100.0
7	24.09	71.0	F	-1	W	100.0
8	24.09	69.0	F	-1	W	100.0
9	24.09	66.0	F	-1	W	100.0
10	24.09	68.5	M	-1	W	100.0
11	24.09	75.0	F	-1	W	100.0
12	24.09	69.5	F	-1	W	100.0
13	24.09	69.5	F	-1	W	100.0
14	24.09	71.5	F	-1	W	100.0
15	24.09	71.0	F	-1	W	100.0
16	24.09	66.0	F	-1	R	100.0
17	24.09	71.0	F	-1	W	100.0
18	24.09	67.5	F	-1	W	100.0
19	24.09	69.0	F	-1	W	100.0
20	24.09	71.0	F	-1	R	100.0
21	24.09	68.0	F	-1	W	100.0
22	24.09	69.5	F	-1	W	100.0
23	24.09	71.0	F	-1	W	100.0
24	24.09	62.0	F	-1	W	100.0
25	24.09	71.0	F	-1	W	100.0
26	24.09	69.5	F	-1	W	100.0
27	24.09	70.0	F	-1	W	100.0
28	24.09	74.0	F	-1	R	100.0
29	24.09	71.5	F	-1	W	100.0
30	24.09	70.5	F	-1	W	100.0
31	24.09	58.5	F	-1	W	100.0
32	24.09	56.5	F	-1	W	100.0
33	24.09	72.5	M	-1	W	100.0
34	24.09	80.0	F	-1	W	100.0
35	24.09	66.5	F	-1	W	100.0
36	24.09	80.5	M	-1	W	100.0
37	24.09	74.0	F	-1	W	100.0
38	24.09	69.5	F	-1	R	100.0
39	24.09	62.0	M	-1	W	100.0
40	24.09	70.0	F	-1	W	100.0
41	24.09	67.5	F	-1	W	100.0
42	24.09	65.5	F	-1	W	100.0
43	24.09	68.0	F	-1	W	100.0
44	24.09	73.5	F	-1	W	100.0
45	24.09	86.0	M	-1	R	100.0
46	24.09	83.5	F	-1	W	100.0
47	24.09	73.0	M	-1	W	100.0
48	24.09	67.0	F	-1	W	100.0
49	24.09	70.0	F	-1	W	100.0
50	24.09	72.5	F	-1	W	100.0
51	25.09	71.5	F	-1	R	100.0
52	25.09	67.5	F	-1	R	100.0
53	25.09	68.0	F	-1	W	100.0
54	25.09	68.0	F	-1	W	100.0
55	25.09	70.5	F	-1	W	100.0
56	25.09	72.0	F	-1	W	100.0
57	25.09	75.0	M	-1	W	100.0
58	25.09	70.5	F	-1	W	100.0
59	25.09	74.5	F	-1	W	100.0
60	25.09	71.0	F	-1	W	100.0
61	25.09	67.0	M	-1	W	100.0
62	25.09	72.5	F	-1	W	100.0
63	25.09	77.5	F	-1	W	100.0
64	25.09	70.5	F	-1	R	100.0
65	25.09	76.0	F	-1	R	100.0
66	25.09	72.5	F	-1	R	100.0
67	25.09	70.0	F	-1	W	100.0
68	25.09	77.5	F	-1	W	100.0
69	25.09	59.5	M	-1	W	100.0
70	25.09	76.5	M	-1	W	100.0
71	25.09	66.5	F	-1	W	100.0
72	25.09	72.5	F	-1	R	100.0
73	25.09	71.5	F	-1	W	100.0
74	25.09	69.5	F	-1	W	100.0
75	25.09	67.0	F	-1	W	100.0
76	25.09	72.0	F	-1	W	100.0
77	25.09	75.5	F	-1	W	100.0
78	25.09	72.5	F	-1	W	100.0
79	25.09	69.5	F	-1	W	100.0
80	25.09	64.5	F	-1	W	100.0
81	25.09	69.0	F	-1	W	100.0
82	25.09	72.0	F	-1	W	100.0
83	25.09	79.0	F	-1	W	100.0
84	25.09	73.0	F	-1	W	100.0
85	25.09	77.5	F	-1	W	100.0
86	25.09	74.5	F	-1	W	100.0
87	25.09	69.0	F	-1	W	100.0
88	25.09	73.5	F	-1	W	100.0
89	25.09	71.5	F	-1	W	100.0
90	25.09	71.0	F	-1	W	100.0
91	25.09	78.5	F	-1	W	100.0
92	25.09	78.5	F	-1	W	100.0
93	25.09	70.5	F	-1	W	100.0
94	25.09	75.0	F	-1	W	100.0
95	25.09	74.0	F	-1	W	100.0
96	25.09	69.5	F	-1	R	100.0
97	25.09	74.0	M	-1	W	100.0
98	25.09	66.0	F	-1	W	100.0
99	25.09	76.0	F	-1	W	100.0
100	25.09	71.0	F	-1	W	100.0
101	25.09	71.0	F	-1	W	100.0
102	25.09	71.5	F	-1	W	100.0
103	25.09	71.0	F	-1	W	100.0
104	25.09	71.0	F	-1	W	100.0
105	25.09	73.5	F	-1	W	100.0
106	25.09	67.5	F	-1	W	100.0
107	25.09	71.0	F	-1	W	100.0
108	25.09	71.0	F	-1	W	100.0
109	25.09	65.0	M	-1	W	100.0
110	25.09	73.0	F	-1	W	100.0
111	25.09	67.0	M	-1	R	25.0
112	25.09	75.0	F	-1	W	100.0
113	25.09	71.5	F	-1	W	100.0
114	25.09	71.5	F	-1	W	100.0
115	25.09	69.0	F	-1	W	100.0
116	25.09	65.0	F	-1	R	100.0
117	25.09	68.5	F	-1	R	100.0
118	25.09	68.5	F	-1	W	100.0
119	25.09	69.0	F	-1	W	100.0
120	25.09	68.5	F	-1	W	100.0
121	25.09	72.5	F	-1	W	100.0
122	25.09	69.0	F	-1	W	100.0
123	25.09	72.0	F	-1	W	100.0
124	25.09	73.5	F	-1	R	100.0
125	25.09	72.0	F	-1	R	100.0
126	25.09	72.5	F	-1	W	100.0
127	25.09	72.5	F	-1	W	100.0
128	25.09	73.5	F	-1	W	100.0
129	25.09	68.0	F	-1	R	100.0
130	25.09	74.0	F	-1	W	100.0
131	25.09	70.5	F	-1	W	100.0
132	25.09	69.5	F	-1	W	100.0
133	25.09	74.5	F	-1	W	100.0
134	25.09	68.0	F	-1	W	100.0
135	25.09	75.5	F	-1	R	100.0

136	25.09	73.5	F	-1	R	100.0
137	25.09	71.5	F	-1	W	100.0
138	25.09	70.0	F	-1	W	100.0
139	25.09	72.5	F	-1	W	100.0
140	25.09	77.0	F	-1	W	100.0
141	25.09	71.5	F	-1	W	100.0
142	25.09	75.0	M	-1	W	100.0
143	25.09	73.0	F	-1	P	100.0
144	25.09	68.0	F	-1	W	100.0
145	25.09	70.5	F	-1	W	100.0
146	25.09	68.0	F	-1	W	100.0
147	25.09	78.0	M	-1	W	100.0
148	25.09	72.5	F	-1	W	100.0
149	25.09	74.5	M	-1	W	25.0
150	25.09	57.0	M	-1	W	100.0
151	25.09	67.0	M	-1	W	100.0
152	25.09	65.0	F	-1	W	100.0
153	25.09	69.5	F	-1	W	100.0
154	25.09	79.0	F	-1	W	100.0
155	25.09	77.0	M	-1	W	100.0
156	25.09	75.0	F	-1	P	100.0
157	25.09	72.5	F	-1	W	100.0
158	25.09	64.0	F	-1	W	100.0
159	25.09	60.0	M	-1	W	100.0
160	25.09	70.0	F	-1	W	100.0
161	25.09	64.5	M	-1	W	25.0
162	25.09	72.0	F	-1	W	100.0
163	25.09	54.5	M	-1	W	100.0
164	25.09	75.0	M	-1	W	100.0
165	25.09	77.0	M	-1	W	100.0
166	25.09	71.5	M	-1	W	100.0
167	25.09	81.0	M	-1	W	100.0
168	25.09	60.0	M	-1	W	100.0
169	25.09	68.0	F	-1	R	100.0
170	25.09	76.5	M	-1	W	100.0
171	25.09	55.5	M	-1	W	100.0
172	26.09	66.0	M	0	W	100.0
173	26.09	71.0	F	52	P	100.0
174	26.09	73.5	F	52	R	100.0
175	26.09	72.5	M	52	W	100.0
176	26.09	83.0	M	52	W	25.0
177	26.09	79.5	M	41	W	100.0
178	26.09	33.0	M	32	W	25.0
179	26.09	86.5	M	51	W	100.0
180	26.09	72.0	F	52	W	100.0
181	26.09	73.5	F	52	W	100.0
182	27.09	73.5	F	0	W	-1.0
183	27.09	77.0	F	42	W	-1.0
184	27.09	55.0	M	42	W	-1.0
185	27.09	70.5	F	52	W	-1.0
186	27.09	73.5	F	52	W	-1.0
187	25.09	73.0	F	0	P	-1.0
188	27.09	72.0	F	42	W	-1.0
189	27.09	67.5	F	42	W	-1.0
190	27.09	66.5	F	52	W	-1.0
191	27.09	70.0	F	52	W	-1.0
192	27.09	73.5	F	52	W	-1.0
193	27.09	58.0	F	52	W	-1.0
194	27.09	58.0	F	52	W	-1.0
195	27.09	55.5	F	42	P	-1.0
196	27.09	73.5	F	52	W	-1.0
197	27.09	73.0	F	0	W	-1.0
198	27.09	72.0	F	0	W	-1.0
199	27.09	58.5	F	52	W	-1.0
200	27.09	58.0	F	52	W	-1.0
201	25.09	69.0	F	52	W	-1.0
202	25.09	74.0	F	52	W	-1.0
203	25.09	68.0	F	52	W	-1.0
204	27.09	72.0	F	52	P	-1.0
205	27.09	54.4	M	42	R	100.0
206	27.09	69.0	F	52	W	100.0
207	28.09	65.0	F	52	W	100.0
208	28.09	72.5	F	52	P	100.0
209	28.09	72.5	F	0	W	100.0
210	28.09	77.5	F	52	W	100.0
211	28.09	70.0	F	52	W	100.0
212	28.09	67.5	F	52	P	100.0
213	28.09	71.0	F	52	W	100.0
214	28.09	51.5	M	42	F	100.0
215	28.09	60.0	M	42	W	100.0
216	28.09	69.5	M	52	W	25.0
217	28.09	66.5	F	52	W	100.0
218	28.09	38.0	M	32	P	100.0
219	28.09	65.5	F	41	F	100.0
220	28.09	51.0	M	42	R	50.0
221	28.09	65.5	F	52	W	100.0
222	29.09	69.0	F	52	W	100.0
223	29.09	74.5	F	52	W	100.0
224	29.09	75.5	M	52	W	100.0
225	29.09	62.0	F	0	W	100.0
226	29.09	55.0	M	42	R	100.0
227	29.09	53.0	M	42	W	100.0
228	29.09	47.5	M	42	W	100.0
229	29.09	52.0	M	42	W	100.0
230	29.09	63.0	F	52	W	100.0
231	29.09	62.0	U	52	E	-1.0
232	29.09	45.5	M	0	E	100.0
233	29.09	42.5	M	71	W	100.0
234	29.09	71.0	F	52	P	100.0
235	29.09	73.5	F	52	W	100.0
236	29.09	71.0	F	52	W	100.0
237	29.09	64.0	F	52	W	100.0
238	29.09	72.5	M	41	W	0.0

CHILKO RIVER 1980   130 ADULT CHINOOK

SAMPLE	DATE	LENGTH	SEX	AGE	COLOR	%SPAWN
1	1.10	69.0	F	41	W	100.0
2	1.10	68.5	F	41	W	100.0
3	1.10	71.0	F	52	W	100.0
4	1.10	72.0	F	52	W	100.0
5	1.10	66.5	F	52	W	100.0
6	1.10	69.5	F	52	W	100.0
7	1.10	69.5	F	52	W	100.0
8	1.10	66.5	F	52	W	100.0
9	1.10	74.0	M	52	W	100.0
10	1.10	73.0	M	52	W	100.0
11	1.10	70.0	F	52	W	100.0
12	1.10	78.0	M	52	R	25.0
13	1.10	67.5	M	52	W	100.0
14	1.10	76.0	F	52	W	100.0
15	1.10	71.0	F	52	W	100.0
16	1.10	64.5	F	42	W	100.0
17	1.10	70.0	F	52	W	100.0
18	1.10	69.0	F	52	W	100.0
19	1.10	71.0	M	52	W	100.0
20	1.10	72.5	F	52	W	100.0
21	1.10	73.5	F	52	W	100.0
22	1.10	73.0	M	0	W	100.0
23	1.10	72.0	M	52	W	100.0
24	1.10	66.0	F	52	W	100.0
25	1.10	63.5	F	52	W	100.0
26	1.10	71.5	M	52	W	100.0
27	1.10	74.0	F	41	W	100.0
28	1.10	67.0	F	0	W	100.0
29	1.10	78.5	M	0	W	100.0
30	1.10	78.0	M	52	W	100.0
31	2.10	87.0	M	51	R	100.0
32	2.10	74.5	M	52	W	100.0
33	2.10	69.0	F	52	W	100.0
34	2.10	47.0	M	42	R	100.0
35	2.10	60.0	M	42	W	100.0
36	2.10	66.0	F	52	W	100.0
37	2.10	76.0	M	52	W	100.0
38	2.10	70.0	M	41	W	100.0
39	2.10	67.5	M	52	W	100.0
40	2.10	78.5	M	52	W	100.0
41	2.10	68.0	M	0	W	100.0
42	2.10	69.0	M	52	W	100.0
43	2.10	57.0	M	42	W	100.0
44	2.10	78.5	M	52	W	100.0
45	2.10	77.5	M	52	W	100.0
46	2.10	78.0	M	0	W	100.0
47	2.10	74.0	M	52	W	100.0
48	2.10	62.0	F	42	P	100.0
49	2.10	49.5	M	42	R	100.0
50	2.10	67.5	F	52	W	100.0
51	2.10	68.0	M	42	W	100.0
52	2.10	67.0	F	52	W	100.0
53	2.10	55.5	M	42	W	100.0
54	2.10	63.0	F	41	W	100.0
55	2.10	77.5	M	52	W	100.0
56	2.10	76.5	F	52	W	100.0
57	2.10	68.5	M	52	W	100.0
58	2.10	66.0	F	52	W	100.0
59	2.10	72.5	F	52	W	100.0
60	2.10	72.0	M	52	W	100.0
61	3.10	70.0	F	41	P	100.0
62	3.10	69.0	F	52	W	100.0
63	3.10	69.0	F	52	W	100.0
64	3.10	74.0	F	52	R	100.0
65	3.10	73.0	F	52	W	100.0
66	3.10	70.5	F	52	W	100.0
67	3.10	65.0	F	41	W	100.0
68	3.10	63.5	F	0	R	100.0
69	3.10	68.0	F	52	W	100.0
70	3.10	71.0	F	52	W	100.0
71	3.10	71.0	F	52	W	100.0
72	3.10	66.0	F	52	W	100.0
73	3.10	79.0	F	52	W	100.0
74	3.10	78.0	F	62	W	100.0
75	3.10	71.5	F	41	W	100.0
76	3.10	69.5	F	52	W	100.0
77	3.10	75.5	M	0	W	100.0
78	3.10	70.5	F	52	W	100.0
79	3.10	71.0	F	52	W	100.0
80	3.10	59.5	F	42	R	100.0
81	3.10	82.5	M	52	W	100.0
82	3.10	66.0	F	52	W	100.0
83	3.10	73.0	M	52	R	100.0
84	3.10	70.5	F	52	W	100.0
85	3.10	66.5	F	52	W	100.0
86	3.10	55.0	M	42	W	100.0
87	3.10	68.0	F	41	W	100.0
88	3.10	84.0	M	52	W	100.0
89	3.10	68.5	F	52	W	100.0
90	3.10	70.0	F	52	W	100.0
91	4.10	66.0	F	52	W	100.0
92	4.10	65.0	F	52	P	100.0
93	4.10	67.5	F	0	W	100.0
94	4.10	67.0	F	52	W	100.0
95	4.10	75.5	M	52	W	100.0
96	4.10	65.0	F	0	W	100.0
97	4.10	67.0	F	41	W	100.0
98	4.10	67.5	M	52	P	25.0
99	4.10	68.0	F	52	W	100.0
100	4.10	70.5	F	52	W	100.0
101	4.10	69.5	F	52	W	100.0
102	4.10	70.5	F	52	W	100.0
103	4.10	52.0	M	42	W	100.0
104	4.10	67.0	F	52	W	100.0
105	4.10	80.5	F	52	W	100.0
106	4.10	71.5	F	52	W	100.0
107	4.10	66.0	F	52	W	100.0
108	4.10	64.0	F	52	W	100.0
109	4.10	69.5	F	52	W	100.0
110	4.10	67.0	F	0	W	100.0
111	4.10	62.5	F	42	W	100.0
112	4.10	75.0	M	52	W	100.0
113	4.10	48.5	M	42	W	100.0
114	5.10	72.0	F	52	W	100.0
115	5.10	66.0	F	42	W	100.0
116	5.10	70.0	F	52	W	100.0
117	5.10	73.0	F	52	W	100.0
118	5.10	72.0	F	52	W	100.0
119	5.10	72.0	F	52	W	100.0
120	5.10	73.0	F	52	W	100.0
121	5.10	73.5	F	52	W	100.0
122	5.10	66.5	F	42	W	100.0
123	5.10	75.0	F	52	W	100.0
124	5.10	62.5	F	42	W	100.0
125	5.10	69.5	F	52	W	100.0
126	5.10	69.0	F	52	W	100.0
127	5.10	65.0	F	52	W	100.0
128	5.10	71.5	F	52	W	100.0
129	5.10	71.0	F	52	W	100.0
130	5.10	82.0	F	52	W	100.0

CHILCOTIN RIVER 1976 25 ADULT CHINOOK

SAMPLE	DATE	LENGTH	SEX	AGE	COLOR	%SPAWN
1	11.09	74.9	M	52	P	-1.0
2	11.09	59.1	F	42	W	50.0
3	11.09	60.3	F	42	P	100.0
4	11.09	80.0	M	0	W	-1.0
5	11.09	59.7	F	31	P	100.0
6	11.09	67.3	U	31	B	-1.0
7	11.09	62.2	F	0	P	100.0
8	11.09	58.4	F	42	W	50.0
9	11.09	57.2	F	42	P	0.0
10	11.09	66.1	F	41	P	100.0
11	11.09	55.9	F	-1	P	-1.0
12	11.09	72.4	M	41	P	-1.0
13	11.09	71.0	F	41	W	100.0
14	11.09	58.0	F	31	P	100.0
15	11.09	41.0	M	32	P	100.0
16	11.09	71.0	M	42	P	50.0
17	11.09	76.0	F	0	P	100.0
18	11.09	75.0	F	42	P	100.0
19	11.09	76.0	F	41	P	0.0
20	11.09	72.9	F	0	W	100.0
21	11.09	69.0	F	31	W	50.0
22	11.09	83.0	M	52	W	-1.0
23	11.09	94.0	M	41	W	-1.0
24	23.09	66.0	F	31	P	100.0
25	23.09	38.1	M	21	P	-1.0

CHILCOTIN 1977 19 ADULT CHINOOK

SAMPLE	DATE	LENGTH	SEX	AGE	COLOR	%SPAWN
1	15.09	62.1	M	42	W	-1.0
2	15.09	57.5	M	31	B	-1.0
3	15.09	53.0	M	0	W	-1.0
4	15.09	56.5	F	0	W	-1.0
5	15.09	58.5	M	0	W	-1.0
6	15.09	57.3	F	42	W	-1.0
7	15.09	58.9	F	31	W	-1.0
8	15.09	61.4	F	41	W	-1.0
9	15.09	62.6	M	42	W	-1.0
10	15.09	53.2	M	0	W	-1.0
11	15.09	57.7	M	42	W	-1.0
12	15.09	53.9	F	0	W	-1.0
13	15.09	69.1	F	41	W	-1.0
14	15.09	62.7	F	31	W	-1.0
15	15.09	54.9	M	0	W	-1.0
16	27.09	64.7	F	41	W	-1.0
17	28.09	57.2	F	42	W	-1.0
18	28.09	69.1	F	41	W	-1.0
19	28.09	58.5	F	0	W	-1.0

MAIN CHILCOTIN RIVER 1977 1 ADULT CHINOOK

SAMPLE	DATE	LENGTH	SEX	AGE	COLOR	%SPAWN
1	29.09	72.0	U	41	B	-1.0

CHILCOTIN RIVER 1978 6 ADULT CHINOOK

SAMPLE	DATE	LENGTH	SEX	AGE	COLOR	%SPAWN
1	15.09	68.2	F	42	W	-1.0
2	15.09	65.2	F	41	W	-1.0
3	15.09	58.5	F	31	W	-1.0
4	15.09	65.1	F	0	W	-1.0
5	15.09	64.8	M	41	W	-1.0
6	15.09	76.3	F	0	W	-1.0

CHILCOTIN RIVER 1979 86 ADULT CHINOOK

SAMPLE	DATE	LENGTH	SEX	AGE	COLOR	%SPAWN
1	8.09	65.1	F	31	R	99.0
2	8.09	53.0	M	31	W	-1.0
3	8.09	61.1	M	31	W	-1.0
4	8.09	57.0	M	31	W	99.0
5	8.09	68.3	F	41	W	99.0
6	8.09	54.1	F	42	W	99.0
7	8.09	62.8	F	31	W	99.0
8	12.09	65.0	F	41	W	99.0
9	12.09	51.2	M	31	W	-1.0
10	12.09	56.1	F	31	W	99.0
11	12.09	59.9	F	31	W	99.0
12	12.09	67.4	F	41	W	99.0
13	12.09	68.1	F	41	W	99.0
14	12.09	57.3	M	31	W	-1.0
15	12.09	60.1	F	31	W	0.0
16	12.09	67.3	F	41	W	99.0
17	12.09	60.0	F	31	W	99.0
18	12.09	64.2	F	31	W	99.0
19	12.09	63.7	F	41	W	99.0
20	12.09	57.1	F	31	W	99.0
21	12.09	55.4	F	42	W	99.0
22	12.09	65.2	F	41	W	99.0
23	12.09	55.9	M	31	W	-1.0
24	12.09	57.1	M	31	W	-1.0
25	12.09	63.2	M	31	W	-1.0
26	12.09	56.2	M	31	W	-1.0
27	12.09	58.6	F	31	W	99.0
28	12.09	64.5	M	31	W	-1.0
29	12.09	61.5	F	31	W	99.0
30	12.09	58.6	M	31	W	-1.0
31	12.09	60.0	M	31	W	-1.0
32	12.09	71.8	M	41	W	-1.0
33	12.09	54.2	M	0	W	-1.0
34	12.09	62.7	F	31	W	99.0
35	12.09	60.7	M	42	W	-1.0
36	12.09	67.9	F	31	W	99.0
37	12.09	56.1	F	42	W	99.0
38	12.09	53.5	M	31	W	-1.0
39	12.09	56.6	M	31	W	-1.0
40	12.09	55.0	F	0	W	99.0
41	12.09	53.5	M	31	W	-1.0
42	12.09	56.5	M	31	W	-1.0
43	12.09	68.3	F	41	W	99.0
44	12.09	59.5	F	31	W	99.0
45	12.09	53.4	M	31	W	-1.0
46	12.09	54.4	F	31	W	99.0
47	12.09	61.6	F	31	W	99.0
48	12.09	59.1	F	31	W	0.0
49	13.09	51.6	M	31	W	-1.0
50	13.09	58.5	M	31	W	-1.0
51	13.09	54.4	F	31	W	99.0
52	13.09	61.0	M	31	W	-1.0

53	13.09	49.5	M	31	W	-1.0
54	13.09	59.9	F	31	W	99.0
55	13.09	55.5	M	31	W	-1.0
56	13.09	53.7	M	31	W	-1.0
57	13.09	47.1	M	21	W	-1.0
58	13.09	69.4	M	0	W	-1.0
59	13.09	65.0	F	41	W	99.0
60	13.09	57.9	M	42	W	-1.0
61	13.09	53.9	F	41	W	99.0
62	13.09	52.5	M	31	W	-1.0
63	13.09	57.2	M	42	W	-1.0
64	13.09	75.5	F	41	W	99.0
65	15.09	57.5	F	31	W	99.0
66	15.09	71.0	F	52	W	99.0
67	15.09	64.6	M	31	W	-1.0
68	15.09	68.8	M	41	W	-1.0
69	15.09	64.9	F	31	W	99.0
70	15.09	65.3	F	0	W	99.0
71	15.09	53.6	M	31	W	-1.0
72	15.09	59.7	F	42	W	99.0
73	15.09	53.9	F	31	W	99.0
74	15.09	57.6	F	31	W	99.0
75	15.09	52.8	M	31	W	-1.0
76	15.09	69.8	F	41	W	99.0
77	15.09	65.5	F	31	W	99.0
78	15.09	57.1	F	41	W	99.0
79	15.09	57.5	F	31	W	99.0
80	15.09	62.0	M	31	W	-1.0
81	15.09	70.2	F	31	W	99.0
82	15.09	37.7	M	21	W	-1.0
83	15.09	57.0	F	31	W	99.0
84	15.09	59.4	F	31	W	99.0
85	25.09	57.0	F	31	W	99.0
86	25.09	59.5	U	31	B	-1.0

CHILCOTIN RIVER 1980   242 ADULT CHINOOK

SAMPLE	DATE	LENGTH	SEX	AGE	COLOR	%SPAWN
1	2.09	54.2	M	42	R	100.0
2	6.09	69.4	M	0	R	100.0
3	9.09	73.1	F	0	W	100.0
4	9.09	69.1	F	52	P	100.0
5	9.09	60.3	M	0	R	100.0
6	9.09	71.4	F	52	P	100.0
7	9.09	68.7	F	52	P	100.0
8	9.09	63.2	M	52	R	100.0
9	9.09	51.1	M	-1	W	25.0
10	9.09	67.9	F	0	W	100.0
11	9.09	60.6	M	42	R	100.0
12	9.09	61.6	M	42	W	100.0
13	9.09	44.6	M	21	R	100.0
14	9.09	71.8	M	52	R	100.0
15	9.09	57.1	M	42	R	100.0
16	9.09	42.4	M	32	P	100.0
17	9.09	62.3	F	31	W	100.0
18	9.09	65.5	F	42	W	25.0
19	9.09	64.4	F	0	W	100.0
20	9.09	67.8	F	41	P	100.0
21	9.09	67.7	F	52	W	100.0
22	9.09	53.4	M	42	W	100.0
23	9.09	55.2	M	42	R	100.0
24	9.09	62.5	F	42	R	100.0
25	9.09	53.7	M	42	W	100.0
26	9.09	56.0	M	0	W	100.0
27	9.09	54.9	M	31	W	25.0
28	9.09	67.7	F	0	W	100.0
29	9.09	65.0	F	0	W	100.0
30	9.09	57.6	F	42	W	100.0
31	9.09	68.6	M	52	R	100.0
32	9.09	69.9	F	52	W	100.0
33	9.09	51.1	F	42	W	100.0
34	9.09	60.9	F	41	R	100.0
35	9.09	65.4	M	0	R	100.0
36	9.09	67.0	F	52	W	100.0
37	9.09	46.2	M	42	R	25.0
38	9.09	66.3	F	42	R	100.0
39	10.09	67.6	F	41	W	100.0
40	10.09	56.5	F	42	W	100.0
41	10.09	55.8	F	42	W	100.0
42	10.09	56.3	M	31	B	100.0
43	10.09	54.2	M	31	R	25.0
44	10.09	52.4	M	42	W	100.0
45	10.09	55.2	M	41	W	100.0
46	10.09	54.4	M	31	W	100.0
47	10.09	67.8	M	52	W	100.0
48	10.09	52.5	M	42	R	100.0
49	10.09	70.6	F	41	W	100.0
50	10.09	46.4	M	0	R	100.0
51	10.09	68.6	F	0	R	100.0
52	10.09	69.2	F	52	R	100.0
53	10.09	56.1	M	42	W	100.0
54	10.09	50.3	M	31	P	100.0
55	10.09	59.9	M	42	W	100.0
56	10.09	59.4	M	42	B	100.0
57	10.09	51.3	M	0	R	100.0
58	10.09	64.5	F	52	R	100.0
59	10.09	69.1	F	51	R	100.0
60	10.09	67.9	F	0	R	100.0
61	10.09	65.0	F	52	W	100.0
62	10.09	58.2	F	31	P	100.0
63	10.09	41.1	M	21	W	100.0
64	10.09	62.3	F	52	P	100.0
65	10.09	62.8	M	42	W	100.0
66	10.09	54.1	M	42	W	100.0
67	10.09	54.8	M	42	W	100.0
68	10.09	57.5	M	31	W	100.0
69	10.09	49.9	M	42	B	100.0
70	10.09	69.8	F	41	W	100.0
71	10.09	59.7	F	42	W	100.0
72	10.09	68.0	F	52	W	100.0
73	10.09	59.0	F	0	W	100.0
74	10.09	58.7	F	42	R	100.0
75	10.09	56.0	M	42	R	100.0
76	10.09	69.4	F	0	W	100.0
77	10.09	64.8	F	41	W	100.0
78	10.09	58.4	F	42	W	100.0
79	10.09	62.4	F	-1	W	100.0
80	10.09	66.0	F	-1	W	100.0
81	10.09	53.3	M	-1	W	100.0
82	10.09	59.9	F	-1	R	100.0
83	10.09	67.2	F	-1	W	100.0
84	10.09	65.7	F	-1	W	100.0
85	10.09	53.2	M	-1	W	100.0
86	10.09	72.3	F	-1	W	100.0
87	10.09	69.2	F	-1	R	100.0
88	10.09	50.4	M	-1	W	100.0
89	10.09	57.3	M	-1	R	100.0
90	10.09	58.2	F	-1	P	100.0
91	10.09	73.2	F	-1	W	100.0
92	10.09	70.4	M	-1	W	100.0
93	10.09	51.6	M	-1	R	100.0
94	10.09	69.0	F	-1	P	100.0
95	10.09	51.6	M	-1	P	100.0
96	10.09	61.7	M	-1	R	100.0
97	10.09	48.4	M	-1	W	100.0
98	10.09	50.2	M	-1	R	100.0
99	10.09	67.3	F	-1	W	100.0
100	10.09	53.5	M	-1	W	100.0
101	10.09	54.6	M	-1	W	100.0

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102 10.09   57.2   F   -1   R    100.0     172 17.09   57.5   M   42   R    100.0
103 10.09   53.8   F   -1   W    100.0     173 17.09   69.7   F    0   R    100.0
104 10.09   57.3   M   -1   W    100.0     174 17.09   71.4   F   52   W    100.0
105 10.09   55.6   F   -1   W    100.0     175 17.09   69.4   F   52   W    100.0
106 10.09   66.1   F   -1   W    100.0     176 17.09   59.2   F   42   W    100.0
107 10.09   64.7   F   -1   W    100.0     177 17.09   57.0   F   42   B    100.0
108 10.09   64.7   F   -1   R    100.0     178 17.09   70.4   F    0   W    100.0
109 10.09   57.9   F   -1   W    100.0     179 17.09   70.5   F   52   W    100.0
110 10.09   56.6   M   -1   R    100.0     180 17.09   70.5   F   42   W    100.0
111 10.09   52.7   F   -1   R    100.0     181 17.09   41.5   M    0   B    100.0
112 11.09   48.0   M    0   R    100.0     182 17.09   55.9   F   31   W    100.0
113 11.09   61.5   F   41   W    100.0     183 17.09   71.8   F   52   W    100.0
114 11.09   66.4   F    0   W    100.0     184 17.09   67.2   F   42   R    100.0
115 11.09   38.0   M   21   B    100.0     185 17.09   70.3   F   52   R    100.0
116 11.09   67.6   F   52   W    100.0     186 17.09   69.5   F    0   W    100.0
117 11.09   59.4   F   31   W    100.0     187 17.09   68.0   F   42   W    100.0
118 11.09   68.0   F    0   W    100.0     188 17.09   66.2   F   52   W    100.0
119 11.09   68.5   F    0   W    100.0     189 17.09   68.7   F   52   W    100.0
120 11.09   80.0   M   52   W    100.0     190 17.09   63.7   F   42   R    100.0
121 11.09   62.6   F   42   W    100.0     191 17.09   64.0   M    0   W    100.0
122 11.09   54.3   M   42   R    100.0     192 17.09   50.7   F    0   W    100.0
123 11.09   53.4   F   -1   R    100.0     193 17.09   50.4   M   -1   W    100.0
124 11.09   70.5   F   41   W    100.0     194 17.09   53.5   F   -1   W    100.0
125 11.09   59.5   M   42   F    100.0     195 17.09   57.0   F   -1   W    100.0
126 11.09   54.9   M   -1   W    100.0     196 17.09   55.1   M   -1   W    100.0
127 11.09   67.9   F    0   W    100.0     197 17.09   70.4   M   -1   W    100.0
128 11.09   54.4   M   -1   W    100.0     198 17.09   51.8   F   -1   W    100.0
129 11.09   67.6   F   52   W    100.0     199 17.09   63.4   F   -1   B    100.0
130 11.09   65.4   F   41   W    100.0     200 17.09   54.1   F   -1   W    100.0
131 11.09   73.1   F    0   R    100.0     201 17.09   66.1   M   -1   W    100.0
132 11.09   64.2   M   41   W    100.0     202 17.09   55.0   F   -1   W    100.0
133 11.09   66.7   F    0   W    100.0     203 17.09   54.9   M   -1   R    100.0
134 11.09   70.2   F   52   R    100.0     204 17.09   53.8   M   -1   W    100.0
135 11.09   50.7   M    0   W    100.0     205 17.09   57.2   M   -1   B    100.0
136 11.09   54.4   F   42   W    100.0     206 17.09   66.0   M   -1   W    100.0
137 11.09   53.0   F   42   W    100.0     207 17.09   72.3   M   -1   W     25.0
138 11.09   53.7   M   42   B    100.0     208 17.09   62.1   F   -1   W    100.0
139 11.09   75.4   M   52   B    100.0     209 17.09   49.5   M   -1   R    100.0
140 11.09   57.4   F   42   W    100.0     210 17.09   64.9   F   -1   R    100.0
141 12.09   57.0   F   41   R    100.0     211 17.09   54.0   F   -1   W    100.0
142 12.09   63.9   F   42   W    100.0     212 17.09   68.4   F   -1   R    100.0
143 12.09   61.5   F   42   W    100.0     213 17.09   57.3   F   -1   R    100.0
144 12.09   63.6   F   42   W    100.0     214 17.09   56.8   M   -1   W    100.0
145 12.09   77.2   F   41   R    100.0     215 17.09   68.1   M   -1   W    100.0
146 12.09   70.0   F   -1   W    100.0     216 17.09   63.2   F   -1   W    100.0
147 12.09   60.4   M   42   W    100.0     217 18.09   56.2   F   31   W    100.0
148 12.09   49.8   M    0   B    100.0     218 18.09   52.3   F   31   R    100.0
149 12.09   61.6   F   42   W    100.0     219 18.09   55.9   F   42   R    100.0
150 12.09   54.5   F   42   R    100.0     220 18.09   54.6   F    0   W    100.0
151 12.09   68.1   F   52   R    100.0     221 18.09   65.7   F   52   W    100.0
152 12.09   66.2   F   52   W    100.0     222 18.09   65.5   F    0   R    100.0
153 12.09   69.6   F   -1   W    100.0     223 18.09   64.6   F   41   W    100.0
154 12.09   53.8   M   42   W    100.0     224 18.09   57.0   M   52   W    100.0
155 12.09   56.0   F   42   R    100.0     225 18.09   63.0   F   41   R    100.0
156 12.09   60.0   F    0   R    100.0     226 18.09   57.4   F   -1   R    100.0
157 12.09   68.6   F    0   W    100.0     227 18.09   55.1   F   31   W    100.0
158 12.09   49.3   M    0   W    100.0     228 18.09   58.0   M    0   R    100.0
159 12.09   59.1   M    0   W    100.0     229 18.09   55.0   M   42   R    100.0
160 12.09   65.9   F   42   B    100.0     230 18.09   65.5   F   52   R    100.0
161 12.09   71.2   M   52   W    100.0     231 18.09   65.1   F   52   R    100.0
162 12.09   68.6   F    0   W    100.0     232 18.09   62.3   M   42   W    100.0
163 12.09   51.4   M   42   R    100.0     233 18.09   73.1   M   52   R     25.0
164 12.09   65.3   M   52   W    100.0     234 18.09   56.6   F   -1   R    100.0
165 12.09   52.6   F    0   W    100.0     235 18.09   51.6   F   -1   W    100.0
166 12.09   50.0   M   31   R    100.0     236 18.09   56.0   F   42   W    100.0
167 12.09   68.5   F    0   B    100.0     237 18.09   59.7   M   -1   W    100.0
168 12.09   66.0   F   41   W    100.0     238 18.09   53.2   F    0   W    100.0
169 17.09   66.8   M   52   R    100.0     239 18.09   65.4   F   52   R    100.0
170 17.09   66.6   F    0   R    100.0     240 18.09   56.9   M   42   R    100.0
171 17.09   58.9   F   42   W    100.0     241 18.09   55.1   F   31   W    100.0
                                           242 18.09   64.1   M   -1   W    100.0
```

ELKIN CREEK 1977 29 ADULT CHINOOK

SAMPLE	DATE	LENGTH	SEX	AGE	COLOR	%SPAWN
1	12.09	72.8	M	52	W	-1.0
2	12.09	75.0	M	41	W	-1.0
3	12.09	54.5	M	31	W	-1.0
4	12.09	60.5	M	31	W	-1.0
5	12.09	72.6	F	0	W	-1.0
6	12.09	76.4	M	41	W	-1.0
7	12.09	59.5	F	31	W	-1.0
8	12.09	57.9	F	0	W	-1.0
9	12.09	61.9	M	42	W	-1.0
10	12.09	72.1	F	52	W	-1.0
11	12.09	58.2	M	0	W	-1.0
12	12.09	67.7	M	41	W	-1.0
13	12.09	70.0	F	41	W	-1.0
14	12.09	53.8	M	42	W	-1.0
15	12.09	68.6	F	41	W	-1.0
16	12.09	69.7	M	52	W	-1.0
17	12.09	59.3	F	31	W	-1.0
18	12.09	78.1	M	51	W	-1.0
19	12.09	72.5	M	41	W	-1.0
20	12.09	71.8	F	52	W	-1.0
21	12.09	67.2	M	41	W	-1.0
22	14.09	55.8	M	31	W	-1.0
23	14.09	64.9	F	41	W	-1.0
24	14.09	71.4	M	41	W	-1.0
25	14.09	55.3	M	31	W	-1.0
26	14.09	75.7	M	41	W	-1.0
27	14.09	73.4	M	52	W	-1.0
28	14.09	72.9	F	41	W	-1.0
29	14.09	56.8	M	31	W	-1.0

ELKIN CREEK 1978 10 ADULT CHINOOK

SAMPLE	DATE	LENGTH	SEX	AGE	COLOR	%SPAWN
1	13.09	70.8	M	41	W	-1.0
2	13.09	66.0	M	42	W	-1.0
3	13.09	70.1	F	52	W	-1.0
4	13.09	66.3	M	42	W	-1.0
5	13.09	56.6	F	31	W	-1.0
6	13.09	76.0	M	41	W	-1.0
7	13.09	66.7	M	41	W	-1.0
8	13.09	66.4	M	41	W	-1.0
9	13.09	47.0	M	31	W	-1.0
10	13.09	65.5	F	41	W	-1.0

ELKIN CREEK 1979 17 ADULT CHINOOK

SAMPLE	DATE	LENGTH	SEX	AGE	COLOR	%SPAWN
1	19.09	62.8	F	41	W	99.0
2	19.09	72.5	M	41	W	-1.0
3	19.09	63.2	F	31	W	99.0
4	19.09	57.6	F	31	W	99.0
5	19.09	48.9	M	31	W	-1.0
6	19.09	68.2	F	41	W	99.0
7	19.09	55.1	M	0	W	-1.0
8	19.09	59.2	F	52	W	99.0
9	19.09	64.1	M	0	W	-1.0
10	19.09	66.6	F	41	W	99.0
11	19.09	60.0	F	42	W	99.0
12	19.09	67.6	F	31	W	99.0
13	19.09	59.1	F	31	W	99.0
14	19.09	62.4	F	31	W	99.0
15	19.09	58.9	F	0	W	99.0
16	19.09	55.3	F	31	W	99.0
17	19.09	55.2	M	42	W	-1.0

ELKIN CREEK 1980 67 ADULT CHINOOK

SAMPLE	DATE	LENGTH	SEX	AGE	COLOR	%SPAWN
1	31.08	72.5	M	-1	R	0.0
2	5.09	55.0	M	0	R	0.0
3	5.09	71.0	F	52	R	100.0
4	13.09	72.9	F	52	W	100.0
5	13.09	72.4	F	52	W	100.0
6	13.09	72.6	F	52	W	99.0
7	13.09	66.5	M	52	W	25.0
8	13.09	74.4	F	52	B	0.0
9	13.09	70.7	F	52	W	100.0
10	13.09	57.0	M	-1	W	25.0
11	13.09	61.7	M	42	B	100.0
12	13.09	52.8	M	0	W	25.0
13	14.09	64.6	F	52	W	100.0
14	14.09	66.1	F	52	R	90.0
15	14.09	51.7	M	42	W	25.0
16	14.09	69.8	F	0	W	100.0
17	14.09	78.4	M	52	W	25.0
18	14.09	68.1	F	41	R	100.0
19	14.09	71.0	F	52	W	95.0
20	14.09	63.8	F	42	B	100.0
21	14.09	76.0	F	0	W	95.0
22	14.09	70.7	F	0	W	100.0
23	14.09	60.9	F	42	W	99.0
24	14.09	71.0	F	41	R	100.0
25	14.09	53.7	M	42	W	25.0
26	14.09	66.2	F	0	W	100.0
27	14.09	56.9	F	0	W	100.0
28	14.09	57.5	F	31	W	100.0
29	14.09	68.9	F	52	W	100.0
30	14.09	56.2	F	42	W	80.0
31	14.09	29.5	M	31	W	25.0
32	14.09	65.0	F	42	W	100.0
33	14.09	72.3	M	52	R	100.0
34	14.09	57.8	M	42	W	100.0
35	14.09	60.3	M	42	W	100.0
36	14.09	68.5	F	52	W	100.0
37	14.09	80.4	M	52	W	100.0
38	14.09	74.0	F	41	W	100.0
39	14.09	53.4	M	42	W	100.0
40	14.09	68.3	F	52	W	100.0
41	14.09	73.4	M	0	W	25.0
42	14.09	62.7	F	42	W	100.0
43	14.09	70.3	F	52	W	100.0
44	14.09	69.6	F	52	W	100.0
45	14.09	64.3	F	52	P	100.0
46	14.09	47.2	M	31	P	25.0
47	14.09	60.1	M	42	W	25.0
48	14.09	66.0	F	52	W	100.0
49	14.09	53.4	M	42	W	100.0
50	14.09	69.6	F	52	W	100.0
51	14.09	59.1	M	42	W	25.0
52	14.09	58.2	F	42	W	100.0
53	14.09	66.2	F	52	W	100.0
54	14.09	66.2	F	52	W	100.0
55	14.09	73.9	M	52	W	100.0
56	14.09	49.2	M	31	W	100.0
57	14.09	47.2	M	-1	W	25.0
58	14.09	74.3	M	52	B	25.0
59	14.09	47.7	M	0	W	100.0
60	14.09	47.0	M	-1	R	100.0
61	14.09	70.8	F	52	W	99.0
62	14.09	60.3	M	42	W	100.0
63	14.09	38.6	M	-1	W	25.0
64	14.09	53.8	F	42	W	100.0
65	14.09	56.0	M	0	W	100.0
66	14.09	60.2	F	-1	W	100.0
67	14.09	70.1	M	-1	W	100.0

TASEKO RIVER 1975   17 ADULT CHINOOK

SAMPLE	DATE	LENGTH	SEX	AGE	COLOR	%SPAWN
1	24.09	69.9	F	41	R	-1.0
2	24.09	68.5	F	41	W	-1.0
3	24.09	67.4	F	41	W	-1.0
4	24.09	70.4	F	0	B	-1.0
5	24.09	75.5	F	0	R	-1.0
6	24.09	64.0	F	0	B	-1.0
7	24.09	73.2	F	41	R	-1.0
8	24.09	72.1	F	41	B	-1.0
9	24.09	82.4	M	41	R	-1.0
10	24.09	68.3	F	41	W	-1.0
11	24.09	72.6	F	41	W	-1.0
12	24.09	68.7	F	41	W	-1.0
13	24.09	78.9	F	41	W	-1.0
14	24.09	71.8	F	41	R	-1.0
15	24.09	72.0	F	41	W	-1.0
16	24.09	71.0	F	41	W	-1.0
17	24.09	76.4	F	41	W	-1.0

TASEKO RIVER 1977   20 ADULT CHINOOK

SAMPLE	DATE	LENGTH	SEX	AGE	COLOR	%SPAWN
1	13.09	73.9	F	41	W	-1.0
2	13.09	75.5	M	41	W	-1.0
3	13.09	78.3	M	0	W	-1.0
4	13.09	70.2	F	41	W	-1.0
5	13.09	75.0	M	41	W	-1.0
6	13.09	75.2	M	41	W	-1.0
7	13.09	57.4	F	31	W	-1.0
8	13.09	81.0	M	41	W	-1.0
9	13.09	68.0	M	41	W	-1.0
10	13.09	76.4	F	41	W	-1.0
11	13.09	67.0	F	0	W	-1.0
12	13.09	79.4	M	41	W	-1.0
13	13.09	55.4	M	0	W	-1.0
14	13.09	83.6	M	41	W	-1.0
15	13.09	74.4	F	41	W	-1.0
16	13.09	70.6	F	41	W	-1.0
17	13.09	80.8	M	41	W	-1.0
18	13.09	77.8	M	41	W	-1.0
19	13.09	76.1	M	41	W	-1.0
20	13.09	75.6	M	41	W	-1.0

TASEKO RIVER 1978   10 ADULT CHINOOK

SAMPLE	DATE	LENGTH	SEX	AGE	COLOR	%SPAWN
1	14.09	71.9	F	41	W	-1.0
2	14.09	73.0	F	31	W	-1.0
3	14.09	72.4	F	41	W	-1.0
4	14.09	70.9	F	41	W	0.0
5	14.09	70.0	F	41	W	-1.0
6	14.09	72.8	F	41	W	-1.0
7	14.09	74.3	F	41	W	-1.0
8	14.09	73.8	F	41	W	-1.0
9	14.09	74.9	F	41	W	-1.0
10	14.09	69.9	F	52	W	-1.0

TASEKO RIVER 1979   13 ADULT CHINOOK

SAMPLE	DATE	LENGTH	SEX	AGE	COLOR	%SPAWN
1	18.09	75.9	F	41	W	99.0
2	18.09	76.4	F	41	W	99.0
3	18.09	75.6	M	41	W	-1.0
4	18.09	68.6	F	41	W	99.0
5	12.09	69.2	F	41	W	99.0
6	18.09	69.2	F	41	W	99.0
7	18.09	71.5	F	41	W	99.0
8	18.09	66.8	F	41	W	99.0
9	18.09	68.9	F	41	W	99.0
10	18.09	74.0	Pu	41	W	-1.0 ~~99.0~~
11	18.09	79.2	M	41	W	-1.0
12	18.09	75.8	M	41	W	-1.0
13	18.09	74.4	F	41	W	99.0

TASEKO RIVER 1980   24 ADULT CHINOOK

SAMPLE	DATE	LENGTH	SEX	AGE	COLOR	%SPAWN
1	15.09	68.0	F	0	B	100.0
2	15.09	74.8	M	52	R	100.0
3	15.09	70.6	F	52	W	95.0
4	15.09	67.8	F	52	W	100.0
5	15.09	73.1	F	52	W	100.0
6	15.09	70.1	F	52	W	100.0
7	15.09	71.8	F	52	W	100.0
8	15.09	74.9	M	52	B	100.0
9	15.09	77.6	M	41	R	100.0
10	15.09	75.3	F	41	W	100.0
11	15.09	70.4	F	41	W	100.0
12	15.09	70.4	F	52	W	100.0
13	15.09	70.3	F	52	W	100.0
14	15.09	66.9	F	42	W	100.0
15	15.09	72.2	F	52	W	100.0
16	15.09	70.1	F	41	W	95.0
17	15.09	63.7	F	52	W	100.0
18	15.09	75.3	F	52	W	100.0
19	15.09	67.5	F	52	W	100.0
20	15.09	73.8	F	41	W	100.0
21	15.09	75.4	M	41	W	100.0
22	15.09	72.3	F	52	W	100.0
23	15.09	72.2	F	52	W	100.0
24	15.09	71.5	F	52	W	100.0

APPENDIX XXVI

AGE COMPOSITION AND MEAN POSTORBITAL-HYPURAL LENGTHS BY AGE CLASS FOR ADULT CHINOOK SALMON SAMPLED ON THE CHILCOTIN RIVER SYSTEM, 1975-1980

a) Chilko River

Age Class	AGE COMPOSITION						POST ORBITAL-HYPURAL LENGTHS			
	Number			Percent			Males		Females	
	M	F	Σ	M	F	Σ	x̄ Length	S.E.	x̄ Length	S.E.
1975										
2_1										
3_1	7	10	17	46.7	12.5	17.9	53.5	2.08	68.5	1.11
3_2										
4_1	7	67	74	46.7	83.8	77.9	72.5	1.97	69.8	0.40
4_2		1	1		1.3	1.1			68.2	0.00
5_1	1		1	6.7		1.1	80.0	0.0		
5_2		1	1		1.3	1.1			77.3	0.00
6_2		1	1		1.3	1.1			74.3	0.00
*$\Sigma/\bar{x}$	15	80	95				64.1	2.89	69.8	0.38
1976										
2_1										
3_1		7	7		9.6	9.5			61.8	1.89
3_2										
4_1	1	56	57	100.0	76.7	77.0	78.6	0.00	71.0	0.40
4_2		7	7		9.6	9.5			65.8	1.81
5_1		1	1		1.4	1.4			77.2	0.00
5_2		2	2		2.7	2.7			75.3	0.28
6_2										
$\Sigma/\bar{x}$	1	73	74				78.6	0.00	69.8	0.53
1977										
2_1										
3_1	10	10	20	27.0	8.7	13.2	50.4	1.90	59.4	2.12
3_2										
4_1	18	83	101	48.6	72.2	66.4	75.4	0.99	71.5	0.42
4_2		2	2		1.7	1.3		0.07	62.8	4.53
5_1	2	6	8	5.4	5.2	5.3	86.0		77.7	1.59
5_2	6	14	20	16.2	12.2	13.2	74.5	3.23	74.1	0.43
6_2	1		1	2.7		0.7	83.6			
$\Sigma/\bar{x}$	37	115	152				69.9	2.07	71.1	0.51
1978										
2_1										
3_1	3	3	6	25.0	5.8	9.4	61.8	5.25	62.6	1.67
3_2										
4_1	6	46	52	50.0	88.5	81.3	76.7	1.63	71.0	0.46
4_2	1		1	8.3		1.6	71.4	0.00		
5_1	1	1	2	8.3	1.9	3.1	73.9	0.00	78.8	0.00
5_2	1	2	3	8.3	3.8	4.7	80.6	0.00	71.1	2.83
6_2										
$\Sigma/\bar{x}$	12	52	64				71.8	2.34	71.1	0.50
1979										
2_1	1		1	3.2		0.8	31.0	0		
3_1	9	10	19	29.0	11.1	15.7	58.2	2.50	60.3	0.94
3_2										
4_1	13	64	77	41.9	71.1	63.6	76.5	0.94	70.5	0.49
4_2	2	1	3	6.5	1.1	2.5	60.9	8.13	57.5	0.00
5_1	5	3	8	16.1	3.3	6.6	81.3	0.85	78.8	1.56
5_2	1	12	13	3.2	13.3	10.7	79.2	0.00	71.4	0.92
6_2										
$\Sigma/\bar{x}$	31	90	121				69.4	2.25	69.5	0.54
1980										
2_1										
3_1	4	3	7	2.3	1.2	1.6	54.8	4.10	60.8	2.89
3_2	6		6	3.4		1.4	40.9	2.78		
4_1	30	43	73	17.2	16.7	16.9	73.3	1.15	69.7	0.55
4_2	39	18	57	22.4	7.0	13.2	55.1	0.90	63.2	0.82
5_1	5	2	7	2.9	0.8	1.6	83.7	1.25	78.0	2.97
5_2	86	190	276	49.4	73.9	64.0	73.4	0.44	70.2	0.24
6_2	4	1	5	2.3	0.4	1.2	82.4	0.65	78.0	
$\Sigma/\bar{x}$	174	257	431				68.9	0.74	70.2	0.25

*(1) The difference between these totals and the corresponding values in Table 10 reflects the sexed fish not aged due to resorbed or regenerated scales;
(2) The sum (Σ) applies to the age composition and the mean ($\bar{x}$) to the POHL.

b) Upper Chilcotin River

Age Class	AGE COMPOSITION						POST ORBITAL-HYFURAL LENGTHS			
	Number			Percent			Males		Females	
	M	F	Σ	M	F	Σ	$\bar{x}$ Length	S.E.	$\bar{x}$ Length	S.E.
1976										
2_1	1		1	14.3		5.3	38.1	0.00		
3_1		4	4		33.3	21.1			63.2	2.60
3_2	1		1	14.3		5.3	41.0	0.00		
4_1	2	3	5	28.6	25.0	26.3	83.2	10.82	71.0	2.89
4_2	1	5	6	14.3	41.7	31.6	71.0	0.00	62.0	3.31
5_1										
5_2	2		2	28.6		10.5	79.0	4.03		
$\Sigma/\bar{x}$	7	12	19				69.3	7.03	65.1	2.02
1977										
2_1										
3_1	1	2	3	25.0	25.0	25.0	57.5	0.00	60.8	1.91
3_2										
4_1		4	4		50.0	33.3			66.1	1.85
4_2	3	2	5	75.0	25.0	41.7	60.8	1.56	57.3	0.07
5_1										
5_2										
$\Sigma/\bar{x}$	4	8	12				57.4	1.75	60.8	1.73
1978										
2_1										
3_1		1	1		33.3	25.0			58.5	0.00
3_2										
4_1	1	1	2	100.0	33.3	50.0	64.8	0.00	65.2	0.00
4_2		1	1		33.3	25.0			68.2	0.00
5_1										
5_2										
$\Sigma/\bar{x}$	1	3	4				64.8	0.00	66.7	3.41

Age Class	AGE COMPOSITION						POST ORBITAL-HYPURAL LENGTHS			
	Number			Percent			Males		Females	
	M	F	Σ	M	F	Σ	$\bar{x}$ Length	S.E.	$\bar{x}$ Length	S.E.
1979										
2_1	2		2	5.7		2.5	42.4	4.67		
3_1	28	28	56	80.0	60.9	69.1	56.3	0.79	60.2	0.77
3_2										
4_1	2	13	15	5.7	28.3	18.5	70.3	1.48	66.5	1.26
4_2	3	4	7	8.6	8.7	8.6	58.6	1.10	56.3	1.20
5_1										
5_2		1	1		2.2	1.2			71.0	0.00
$\Sigma/\bar{x}$	35	46	81				56.8	1.08	61.8	0.77
1980										
2_1	3		3	5.8		2.3	41.2	1.90		
3_1	7	8	15	13.5	10.0	11.4	53.9	1.06	56.9	1.13
3_2	1		1	1.9		0.8	42.4	0.00		
4_1	2	14	16	3.8	17.5	12.1	64.7	0.49	66.2	1.34
4_2	28	30	58	53.8	37.5	43.9	55.9	0.74	60.4	0.91
5_1		1	1		1.3	0.8			69.1	0.00
5_2	11	27	38	21.2	33.8	28.8	70.0	1.48	67.9	0.46
$\Sigma/\bar{x}$	52	80	132				57.2	1.11	63.5	0.67

c) Elkin Creek

Age Class	AGE COMPOSITION						POST ORBITAL-HYPURAL LENGTHS			
	Number			Percent			Males		Females	
	M	F	Σ	M	F	Σ	$\bar{x}$ Length	S.E.	$\bar{x}$ Length	S.E.
1977										
3_1	5	2	7	27.8	25.0	26.9	56.6	1.03	59.4	0.07
4_1	7	4	11	38.9	50.0	42.3	72.3	1.40	69.1	1.65
4_2	2		2	11.1		7.7	57.9	4.03		
5_1	1		1	5.6		3.8	78.1	0.00		
5_2	3	2	5	16.7	25.0	19.2	72.0	1.15	72.0	0.14
$\Sigma/\bar{x}$	18	8	26				66.1	1.96	67.0	2.05
1978										
3_1	1	1	2	14.3	33.3	20.0	47.0	0.00	56.6	0.00
4_1	4	1	5	57.1	33.3	50.0	70.0	2.25	65.5	0.00
4_2	2		2	28.6		20.0	66.2	0.14		
5_1										
5_2		1	1		33.3	10.0			70.1	0.00
$\Sigma/\bar{x}$	7	3	10				65.6	3.17	64.1	3.41

Age Class	AGE COMPOSITION						POST ORBITAL-HYPURAL LENGTHS			
	Number			Percent			Males		Females	
	M	F	Σ	M	F	Σ	$\bar{x}$ Length	S.E.	$\bar{x}$ Length	S.E.
1979										
3_1	1	6	7	33.3	54.5	50.0	48.9	0.00	60.9	1.80
4_1	1	3	4	33.3	27.3	28.6	72.5	0.00	65.9	1.62
4_2	1	1	2	33.3	9.1	14.3	55.2	0.00	60.2	0.00
5_1										
5_2		1	1		9.1	7.1			69.2	0.00
$\Sigma/\bar{x}$	3	11	14				59.2	4.85	62.6	1.33
1980										
3_1	3	1	4	15.8	3.2	8.0	42.0	6.24	57.5	0.00
4_1		3	3		9.7	6.0			71.0	1.73
4_2	10	7	17	52.6	22.6	34.0	58.2	1.08	60.1	1.59
5_1										
5_2	6	20	26	31.6	64.5	52.0	74.3	2.00	69.2	0.65
$\Sigma/\bar{x}$	19	31	50				59.0	2.75	66.9	0.99

d) Taseko River

Age Class	AGE COMPOSITION						POST ORBITAL-HYPURAL LENGTHS			
	Number			Percent			Males		Females	
	M	F	Σ	M	F	Σ	$\bar{x}$ Length	S.E.	$\bar{x}$ Length	S.E.
1975										
3_1										
4_1	1	13	14	100.0	100.0	100.0	82.4	0.00	71.6	0.92
4_2										
5_2										
$\Sigma/\bar{x}$	1	13	14				82.4	0.00	71.3	0.92
1977										
3_1		1	1		16.7	5.9			57.4	0.0
4_1	11	5	16	100.0	83.3	94.1	77.1	1.27	73.1	1.16
4_2										
5_2										
$\Sigma/\bar{x}$	11	6	17				75.5	2.08	70.0	2.45
1978										
3_1		1	1		10.0	10.0			73.0	0.00
4_1		8	8		80.0	80.0			72.6	0.60
4_2										
5_2		1	1		10.0	10.0			69.9	0.00
$\Sigma/\bar{x}$		10	10						72.4	0.54

Age Class	AGE COMPOSITION						POST ORBITAL-HYPURAL LENGTHS			
	Number			Percent			Males		Females	
	M	F	Σ	M	F	Σ	$\bar{x}$ Length	S.E.	$\bar{x}$ Length	S.E.
1979										
3_1										
4_1	4	9	13	100.0	100.0	100.0	76.3	1.05	71.2	1.17
4_2										
5_2										
$\Sigma/\bar{x}$	4	9	13				76.2	1.00	71.2	1.1
1980										
3_1										
4_1	2	4	6	50.0	21.1	26.1	75.5	1.13	72.4	1.30
4_2		1	1		5.3	4.3			66.9	0.0
5_2	2	14	16	50.0	73.7	69.6	74.8	0.07	70.6	0.75
$\Sigma/\bar{x}$	4	19	23				75.7	0.65	70.7	0.67

APPENDIX XXVII

LENGTH DISTRIBUTION BY AGE CLASS OF CHINOOK CARCASSES SAMPLED FROM THE CHILCOTIN RIVER SYSTEM, 1975-1980

a) Chilko River

1975	MALES												FEMALES											
Age Classes	2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%	2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%
Size Classes (cm) 28-31.9																								
32-35.9																								
36-39.9																								
40-43.9		1									1	7												
44-47.9																								
48-51.9																								
52-55.9		3									3	20				1							1	1
56-59.9		3									3	20												
60-63.9														1		1							2	2
64-67.9				1							1	7		4		11							15	18
68-71.9				3							3	20		3		40	1				1	3	48	57
72-75.9														2		12				1			15	18
76-79.9				3							3	20				2			1				3	4
80-83.9						1					1	7												
84-87.9																								
88-91.9																								
92-95.9																								
n		7		7		1					15			10		67	1		1	1	1	3	84	
%		47		47		7								13		84	1		1	1				
$\bar{x}$ length (cm)		53.5		72.5		80.0								68.5		69.8	68.2		77.3	74.3	69.0	70.2		
S.E.		2.08		1.97		0.0								1.11		0.40	0.0		0.0	0.0				

1976	MALES												FEMALES											
Age Classes	2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%	2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%
Size Classes (cm) 28-31.9																								
32-35.9																								
36-39.9																								
40-43.9																								
44-47.9																								
48-51.9																								
52-55.9														1									1	1
56-59.9														1			1						2	3
60-63.9														3			2						5	7
64-67.9														1		9	1					2	13	17
68-71.9														1		25	3						29	38
72-75.9																20			2			1	23	30
76-79.9				1							1	100				2		1					3	4
80-83.9																								
84-87.9																								
88-91.9																								
92-95.9																								
n				1										7		56	7	1	2			3	76	
%				100										10		77	10	1	3					
$\bar{x}$ length (cm)				78.6										61.8		71.0	65.8	77.2	75.3			70.2		
S.E.				0.0										1.89		0.40	1.81	0.0	0.28			4.0		

1977	MALES												FEMALES											
Age Classes	2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%	2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%
Size Classes (cm) 28-31.9																								
32-35.9																								
36-39.9																								
40-43.9		2									2	5												
44-47.9		2									2	5												
48-51.9		1								1	2	5		2									2	2
52-55.9		4									4	9		1									1	1
56-59.9														2		1	1						4	3
60-63.9		1					1				2	5		3		1							4	3
64-67.9							1				1	2		1		13	1					2	17	13
68-71.9				5							5	12		1		31			1			4	37	29
72-75.9				5						2	7	16				28		1	11			1	41	32
76-79.9				6			2			1	9	21				9		4	2			5	20	16
80-83.9				1			2	1		2	6	14												
84-87.9				1		2					3	7						1					1	1
88-91.9																								
92-95.9																								
n		10		18		2	6	1		6	43			10		83	2	6	14			12	127	
%		27		49		5	16	3						9		72	2	5	12					
$\bar{x}$ length (cm)		50.4		75.4		86.0	74.5	83.6		73.4				59.4		71.5	62.8	77.7	74.1			72.6		
S.E.		1.90		0.99		0.07	3.23	0.0						2.12		0.42	4.53	1.59	0.43					

APPENDIX XXVII (cont.)

a) Chilko River

1978	MALES												FEMALES											
Size Classes (cm)	Age Classes 2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%	2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%
28-31.9																								
32-35.9																								
36-39.9																								
40-43.9																								
44-47.9																								
48-51.9		1									1	7												
52-55.9																								
56-59.9									1		1	7												
60-63.9																								
64-67.9		2									2	13		2									2	3
68-71.9				1	1						2	13		1		5						1	7	11
72-75.9				1		1				2	4	27				24			1			3	28	44
76-79.9				3							3	20				16			1			7	24	38
80-83.9				1			1				2	13						1				1	3	5
84-87.9																								
88-91.9																								
92-95.9																								
n		3		6	1	1	1		1	2	15			3		46		1	2			12	64	
%		25		50	8	8	8							6		88		2	4					
x̄ length (cm)		61.8		76.7	71.4	73.9	80.6		57.8	73.9				62.6		71.0		78.8	71.1			72.7		
S.E.		5.25		1.63	0.0	0.0	0.0							1.69		0.46		0.0	2.83					

1979	MALES												FEMALES											
Size Classes (cm)	Age Classes 2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%	2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%
28-31.9	1										1	3												
32-35.9																								
36-39.9																								
40-43.9																								
44-47.9																								
48-51.9		1									1	3												
52-55.9		3			1						4	13		1									1	1
56-59.9		2									2	6		1			1						2	2
60-63.9		2									2	6		8		6							14	14
64-67.9																6			2			5	13	13
68-71.9					1						1	3				29			3			5	37	36
72-75.9		1		7							8	26				18			7			2	27	26
76-79.9				3		1	1			1	6	19				5		2					7	7
80-83.9				3		3					6	19						1					1	1
84-87.9																								
88-91.9																								
92-95.9																								
n	1	9		13	2	4	1			1	31			10		64	1	3	12			12	102	
%	3	29		42	6	16	3							11		71	1	3	13					
x̄ length (cm)	31.0	58.2		76.5	60.9	81.3	79.2			76.6				60.3		70.5	57.5	78.8	71.4			68.7		
S.E.	0.0	2.50		0.94	8.13	0.85	0.0							0.94		0.49	0.0	1.56	0.92					

1980	MALES												FEMALES											
Size Classes (cm)	Age Classes 2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%	2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%
28-31.9																								
32-35.9			2								2	0												
36-39.9			1								1	0												
40-43.9		1	1								2	0												
44-47.9			1		3				1	1	6	1												
48-51.9			1	1	8				3		13	3												
52-55.9					17				24		41	10									2		2	0
56-59.9		3			2				14		19	5		2			4				4		10	1
60-63.9				1	5		1		15	1	23	6				2	6		1		22	2	33	4
64-67.9					3		10		20	2	35	8		1		10	7		43		99	5	165	19
68-71.9				8	1		14		33	4	60	14				19	1		88		267	3	378	43
72-75.9				10			37		65	4	111	27				10		1	48		156	8	223	26
76-79.9				7			27		38	3	75	18				2			8	1	43		54	6
80-83.9				3		3	1	3	12		22	5						1	2		4		7	1
84-87.9						2	1	1	3		7	2												
88-91.9																								
92-95.9																					1		1	0
n		4	6	30	39	5	86	4	229	15	417			3		43	18	2	190	1	598	18	873	
%		2	3	17	22	3	49	2						1		17	7	1	74	0				
x̄ length (cm)		54.8	40.9	73.3	55.1	83.7	73.4	82.8	69.3	69.9				60.8		69.7	63.2	78.0	70.2	78.0	70.4	69.6		
S.E.		4.10	2.78	1.15	0.90	1.25	0.44	0.65						2.89		0.55	0.82	2.97	3.3	0.0				

APPENDIX XXVII (cont.)

b) Upper Chilcotin River

1976	MALES												FEMALES											
Size Classes (cm)	Age Classes 2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%	2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%
28-31.9																								
32-35.9																								
36-39.9	1										1	13												
40-43.9			1								1	13												
44-47.9																								
48-51.9																								
52-55.9																					1		1	6
56-59.9														2			3						5	31
60-63.9																	1					1	2	13
64-67.9														1		1							2	13
68-71.9					1						1	13		1		1							2	13
72-75.9				1			1				2	25					1					1	2	13
76-79.9																1						1	2	13
80-83.9							1			1	2	25												
84-87.9																								
88-91.9																								
92-95.9				1							1	13												
n	1		1	2	1		2			1	8			4		3	5				1	3	16	
%	14		14	29	14		29							33		25	42							
$\bar{x}$ length (cm)	38.1		41.0	83.2	71.0		79.0			80.0				63.2		71.0	62.0				55.9	70.1		
S.E.	0.0		0.0	10.82	0.0		4.03							2.60		2.89	3.31							

1977	MALES												FEMALES											
Size Classes (cm)	Age Classes 2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%	2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%
28-31.9																								
32-35.9																								
36-39.9																								
40-43.9																								
44-47.9																								
48-51.9																								
52-55.9										3	3	38										1	1	9
56-59.9		1			1					1	3	38		1			2					2	5	45
60-63.9					2						2	25		1		1							2	18
64-67.9																1							1	9
68-71.9																2							2	18
72-75.9																								
76-79.9																								
80-83.9																								
84-87.9																								
88-91.9																								
92-95.9																								
n		1			3					4	8			2		4	2					3	11	
%		25			75									25		50	25							
$\bar{x}$ length (cm)		57.5			60.8					54.9				60.8		66.1	57.3					56.3		
S.E.		0.0			1.56									1.91		1.85	0.07							

1978	MALES												FEMALES											
Size Classes (cm)	Age Classes 2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%	2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%
28-31.9																								
32-35.9																								
36-39.9																								
40-43.9																								
44-47.9																								
48-51.9																								
52-55.9																								
56-59.9														1									1	20
60-63.9																								
64-67.9				1							1	100				1						1	2	40
68-71.9																	1						1	20
72-75.9																								
76-79.9																						1	1	20
80-83.9																								
84-87.9																								
88-91.9																								
92-95.9																								
n				1							1			1		1	1					2	5	
%				100										33		33	33							
$\bar{x}$ length (cm)				64.8										58.5		65.2	68.2					70.7		
S.E.				0.0										0.0		0.0	0.0							

APPENDIX XXVII (cont.)

b) Upper Chilcotin River

1979	MALES												FEMALES											
	Age Classes																							
Size Classes (cm)	2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%	2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%
28-31.9																								
32-35.9																								
36-39.9	1										1	3												
40-43.9																								
44-47.9	1										1	3												
48-51.9		4									4	11												
52-55.9		10								1	11	30		3			2					1	6	13
56-59.9		7			2						9	24		13		1	2						16	33
60-63.9		5			1						6	16		6		2							8	17
64-67.9		2									2	5		5		5						1	11	23
68-71.9				2						1	3	8		1		4			1				6	13
72-75.9																1							1	2
76-79.9																								
80-83.9																								
84-87.9																								
88-91.9																								
92-95.9																								
n	2	28		2	3					2	37			28		13	4		1			2	48	
%	6	80		6	9									61		28	9		2					
$\bar{x}$ length (cm)	42.4	56.3		70.3	58.6					61.8				60.2		66.5	56.3		71.0			60.2		
S.E.	4.67	0.79		1.48	1.10									0.77		1.16	1.20		0.0					

1980	MALES												FEMALES											
	Age Classes																							
Size Classes (cm)	2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%	2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%
28-31.9																								
32-35.9																								
36-39.9	1										1	1												
40-43.9	1		1							1	3	3												
44-47.9	1				1					1	3	3												
48-51.9		2			2				8	5	17	18					1				1	1	3	2
52-55.9		3			12				9		24	25		4			4				8	2	18	12
56-59.9		2			8				6	2	18	19		3		1	11				7	3	25	17
60-63.9					5		1		1	1	8	8		1		3	7		1		5	1	18	12
64-67.9				2			4		3	2	11	11				6	5		12		8	10	41	28
68-71.9							3		3	1	7	7				3	2	1	14		6	10	36	25
72-75.9							2		1		3	3									2	2	4	3
76-79.9																1							1	1
80-83.9							1				1	1												
84-87.9																								
88-91.9																								
92-95.9																								
n	3	7	1	2	28		11		31	13	96			8		14	30	1	27		37	29	146	
%	6	13	2	4	54		21							10		10	38	1	34					
$\bar{x}$ length (cm)	41.2	53.9	42.4	64.7	55.9		70.0		57.3	54.7				56.9		66.2	60.4	69.1	67.9		61.8	65.4		
S.E.	1.90	1.06	0.0	0.49	0.74		1.48							1.13		1.34	0.91	0.0	0.46					

APPENDIX XXVII (cont.)

c) Elkin Creek

1977

	MALES											
	Age Classes 2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%
Size Classes (cm) 28-31.9												
32-35.9												
36-39.9												
40-43.9												
44-47.9												
48-51.9												
52-55.9		3			1						4	21
56-59.9		1								1	2	11
60-63.9		1			1						2	11
64-67.9				2							2	11
68-71.9				1			1				2	11
72-75.9				3			2				5	26
76-79.9				1		1					2	11
80-83.9												
84-87.9												
88-91.9												
92-95.9												
n		5		7	2	1	3			1	19	
%		28		39	11	6	17					
$\bar{x}$ length (cm)		56.6		72.3	57.9	78.1	72.0			58.2		
S.E.		1.03		1.40	4.03	0.0	1.15					

	FEMALES											
	2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%
Size Classes (cm) 28-31.9												
32-35.9												
36-39.9												
40-43.9												
44-47.9												
48-51.9												
52-55.9												
56-59.9		2								1	3	30
60-63.9												
64-67.9				1							1	10
68-71.9				2			1				3	30
72-75.9				1			1			1	3	30
76-79.9												
80-83.9												
84-87.9												
88-91.9												
92-95.9												
n		2		4			2			2	10	
%		25		50			25					
$\bar{x}$ length (cm)		59.4		69.1			72.0			65.3		
S.E.		0.07		1.65			0.14					

1978

	MALES											
	Age Classes 2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%
Size Classes (cm) 28-31.9												
32-35.9												
36-39.9												
40-43.9												
44-47.9		1									1	14
48-51.9												
52-55.9												
56-59.9												
60-63.9												
64-67.9				2	2						4	57
68-71.9				1							1	14
72-75.9												
76-79.9				1							1	14
80-83.9												
84-87.9												
88-91.9												
92-95.9												
n		1		4	2						7	
%		14		57	29							
$\bar{x}$ length (cm)		47.0		70.0	66.2							
S.E.		0.0		2.25	0.14							

	FEMALES											
	2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%
Size Classes (cm) 28-31.9												
32-35.9												
36-39.9												
40-43.9												
44-47.9												
48-51.9												
52-55.9												
56-59.9		1									1	33
60-63.9												
64-67.9				1							1	33
68-71.9							1				1	33
72-75.9												
76-79.9												
80-83.9												
84-87.9												
88-91.9												
92-95.9												
n		1		1			1				3	
%		33		33			33					
$\bar{x}$ length (cm)		56.6		47.0			70.1					
S.E.		0.0		0.0			0.0					

APPENDIX XXVII (cont.)

c) Elkin Creek

1979	MALES												FEMALES											
	Age Classes 2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%	2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%
Size Classes (cm) 28-31.9																								
32-35.9																								
36-39.9																								
40-43.9																								
44-47.9																								
48-51.9		1									1	20												
52-55.9					1					1	2	40		1									1	8
56-59.9														2								1	3	25
60-63.9														2		1	1						4	33
64-67.9										1	1	20		1		1							2	17
68-71.9																1			1				2	17
72-75.9				1							1	20												
76-79.9																								
80-83.9																								
84-87.9																								
88-91.9																								
92-95.9																								
n		1		1	1					2	5			6		3	1		1			1	12	
%		33		33	33									55		27	9		9					
$\bar{x}$ length (cm)		48.9		72.5	55.2					59.0				60.9		65.9	60.2		69.2			58.9		
S.E.		0.0		0.0	0.0									1.80		1.62	0.0		0.0					

1980	MALES												FEMALES											
	Age Classes 2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%	2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%
Size Classes (cm) 28-31.9		1									1	3												
32-35.9																								
36-39.9									1		1	3												
40-43.9																								
44-47.9		1							2	1	4	13												
48-51.9		1									1	3												
52-55.9					3					2	5	17					1						1	3
56-59.9					2				1	1	4	13		1			2					1	4	11
60-63.9					5						5	17					3				1		4	11
64-67.9							1				1	3					1		6			1	8	22
68-71.9									1		1	3				2			10			2	14	38
72-75.9							3		1	1	5	17				1			4				5	14
76-79.9							1				1	3										1	1	3
80-83.9							1				1	3												
84-87.9																								
88-91.9																								
92-95.9																								
n		3			19		6		6	5	30			1		3	7		20		1	5	37	
%		16			53									3		10	23		65					
$\bar{x}$ length (cm)		42.0			58.2		74.3		55.4	57.0				57.5		71.0	60.1		69.2		60.2	67.7		
S.E.		6.24			1.08		2.00							0.0		1.73	1.59		0.65					

APPENDIX XXVII (cont.)

d) Taseko River

1975	MALES												FEMALES											
Age Classes	2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%	2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%
Size Classes																								
(cm) 28-31.9																								
32-35.9																								
36-39.9																								
40-43.9																								
44-47.9																								
48-51.9																								
52-55.9																								
56-59.9																								
60-63.9																								
64-67.9																1						1	2	13
68-71.9																6						1	7	44
72-75.9																4						1	5	31
76-79.9																2							2	13
80-83.9				1							1	100												
84-87.9																								
88-91.9																								
92-95.9																								
n				1							1					13						3	16	
%				100												100								
$\bar{x}$ length (cm)				82.4												71.6						70.0		
S.E.				0.0												0.92								

1977	MALES												FEMALES											
Age Classes	2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%	2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%
Size Classes																								
(cm) 28-31.9																								
32-35.9																								
36-39.9																								
40-43.9																								
44-47.9																								
48-51.9																								
52-55.9										1	1	8												
56-59.9														1									1	14
60-63.9																								
64-67.9																						1	1	14
68-71.9				1							1	8				2							2	29
72-75.9				4							4	31				2							2	29
76-79.9				3						1	4	31				1							1	14
80-83.9				3							3	23												
84-87.9																								
88-91.9																								
92-95.9																								
n				11						2	13			1		5						1	7	
%				100										17		83								
$\bar{x}$ length (cm)				77.1						66.9				57.4		73.1						67.0		
S.E.				1.27										0.0		1.16								

1978	MALES												FEMALES											
Age Classes	2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%	2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%
Size Classes																								
(cm) 28-31.9																								
32-35.9																								
36-39.9																								
40-43.9																								
44-47.9																								
48-51.9																								
52-55.9																								
56-59.9																								
60-63.9																								
64-67.9																								
68-71.9																3			1				4	40
72-75.9														1		5							6	60
76-79.9																								
80-83.9																								
84-87.9																								
88-91.9																								
92-95.9																								
n														1		8			1				10	
%														10		80			10					
$\bar{x}$ length (cm)														73.0		72.6			69.9					
S.E.														0.0		0.60			0.0					

APPENDIX XXVII (cont.)

d) Taseko River

1979	MALES												FEMALES											
Age Classes	2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%	2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%
Size Classes																								
(cm) 28-31.9																								
32-35.9																								
36-39.9																								
40-43.9																								
44-47.9																								
48-51.9																								
52-55.9																								
56-59.9																								
60-63.9																								
64-67.9																1							1	11
68-71.9																5							5	56
72-75.9				3							3	75				2							2	22
76-79.9				1							1	25				1							1	11
80-83.9																								
84-87.9																								
88-91.9																								
92-95.9																								
n				4												9							9	
%				100												100								
x̄ length (cm)				76.3												71.2								
S.E.				1.05												1.17								

1980	MALES												FEMALES											
Age Classes	2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%	2_1	3_1	3_2	4_1	4_2	5_1	5_2	6_2	P	R	n	%
Size Classes																								
(cm) 28-31.9																								
32-35.9																								
36-39.9																								
40-43.9																								
44-47.9																								
48-51.9																								
52-55.9																								
56-59.9																								
60-63.9																			1				1	5
64-67.9																	1		2				3	15
68-71.9																2			6			1	9	45
72-75.9				1			2				3	75				2			5				7	35
76-79.9				1							1	25												
80-83.9																								
84-87.9																								
88-91.9																								
92-95.9																								
n				2			2				4					4	1		14			1	20	
%				50			50									21	5		74					
x̄ length (cm)				76.5			74.8									72.4	66.9		70.6			68.0		
S.E.				1.13			0.07									1.30	0.0		0.75					

APPENDIX XXVIII

RACE COMPOSITION (FLESH COLOR*) BY AGE CLASS OF CHINOOK CARCASSES SAMPLED FROM THE CHILCOTIN RIVER SYSTEM, 1975-1980

a. Chilko River

	1975			1976			1977			1978			1979			1980		
	Wh	Rd	Pk	Wh	Rd	Pk	Wh	Rd	Pk	Wh	Rd	Pk	Wh	Rd	Pk	Wh	Rd	Pk
MALES																		
2_1													1					
3_1	6	1					10			3			8			3	1	
3_2																5	1	
4_1	4	1	1				18			6			10			26	5	
4_2										1			2			26	12	
5_1							2			1			5			4	1	
5_2							6			1			1			73	11	
6_2							1									3	1	
?							6			3			1			204	37	
Σ	10	2	2				43			15			28			344	70	
FEMALES																		
2_1																		
3_1	8		2				9		1	3			11			2	1	
3_2																		
4_1	49	2	16				83			47			66			36	6	
4_2							2						1			15	3	
5_1							6			1			3			2		
5_2	1						13		1	2			12			169	19	
6_2			1													1		
?	3		1				11		1	12			12			430	153	
Σ	61	2	20				124		3	65			105			655	182	
ΣΣ	71	4	1				167		3	80			133			999	252	

* Wh - White; Rd - Red; Pk - Pink

b. Upper Chilcotin River

	1975			1976			1977			1978			1979			1980		
	Wh	Rd	Pk	Wh	Rd	Pk	Wh	Rd	Pk	Wh	Rd	Pk	Wh	Rd	Pk	Wh	Rd	Pk
MALES																		
2_1						1							2			1	1	
3_1													28			3	3	
3_2						1											1	
4_1				1		1				1			2			2		
4_2						1	3						3			12	13	
5_1																		
5_2				1		1										5	5	
?				1			4						2			27	15	
Σ				3		5	7			1			37			51	38	
FEMALES																		
2_1																		
3_1				1		3	2			1			27	1		6	2	
3_2																		
4_1				1		2	4			1			13			9	5	
4_2				2		3	2			1			4			20	8	
5_1																	1	
5_2													1			15	12	
?				1		3	3			2			2			43	21	
Σ				5		11	11			5			47	1		93	49	
ΣΣ				8		16	18			6			84	1		144	87	

c. Elkin Creek

	1975			1976			1977			1978			1979			1980		
	Wh	Rd	Pk	Wh	Rd	Pk	Wh	Rd	Pk	Wh	Rd	Pk	Wh	Rd	Pk	Wh	Rd	Pk
MALES																		
3_1							5			1			1			2	1	
4_1							7			4			1					
4_2							2			2			1			9		
5_1							1											
5_2							3									4	1	
?							1						2			8	3	
Σ							19			7			5			23	5	
FEMALES																		
3_1							2			1			6			1		
4_1							4			1			3			1	2	
4_2													1			6		
5_1																		
5_2							2			1			1			16	3	
?							2						1			6		
Σ							10			3			12			30	5	
ΣΣ							29			10			17			53	10	

d. Taseko River

	1975			1976			1977			1978			1979			1980		
	Wh	Rd	Pk	Wh	Rd	Pk	Wh	Rd	Pk	Wh	Rd	Pk	Wh	Rd	Pk	Wh	Rd	Pk
MALES																		
3_1																		
4_1		1					11							3		1	1	
4_2																		
5_2																	1	
?							2											
Σ		1					13							3		1	2	
FEMALES																		
3_1							1			1								
4_1	9	3					5			8			9			4		
4_2																1		
5_2										1						14		
?							1											
Σ	9	3					7			10			9			19		
ΣΣ	9	4					20			10			12			20	2	